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MANUFACTURE OF SEALED PACKAGES FROM STRIP STOCK

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 U.S. Cl. 53—29 **14 Claims**

ABSTRACT OF THE DISCLOSURE

A machine for continuously forming packages from strip stock including a plow for forming a double-walled strip of stock, a vertical heat sealer for forming longitudinally spaced pockets along the length of the stock and for separating the pockets by vertical heat seals, a filler wheel having a source of vacuum to separate the side walls of the pockets for filling, the filler wheel having a series of funnels for loading each pocket with material to be packaged, a cutter wheel for shearing the pockets at the heat seals while the pockets are in an upright position, a pair of guide belts for maintaining the severed packages in an upright position, an infeed conveyor in proximity to the guide belts to transport the severed packages, and a horizontal heat sealer downstream from the cutter wheel for forming a longitudinal end seal at the open end of the package for sealing the contents therein. The invention further includes the method of forming sealed packages.

This invention relates to a machine and method for continuously forming a series of filled packages from a continuous length of flexible material. The material may be any flexible medium, such as a plastic, paper, cloth, or metal strip, transparent or otherwise, or in fact, any material that will conform to the herein described requirements. If desired, the strip material may be plastic coated where the pockets are to be formed by a heat sealing operation.

In the continuous manufacture of bulky type packages of the type having a pair of side seals and at least one end seal, difficulty has been encountered in forming a smooth, completely sealed end seal, and one of the primary objectives of this invention is to provide a new method and apparatus for solving such problem. To this end, it has been found that by first filling the longitudinally spaced packets through an upper open end that a better end seal can be maintained where the partially formed package having an upper open end is severed from the length of strip stock before the upper open end is finally sealed. By following this procedure, experiments have shown the weight of the contents of the material being packaged causes less interference with the formation of the upper end seal than where the upper end seal is formed before the package is severed from the strip, enabling a package to be produced having superior appearance, that is, free of wrinkles, and which has a satisfactory upper end seal.

Important features of the present invention relate to an improved method and apparatus for high-speed manufacture of filled packages from continuous strip material, which packages are free of the defects previously described.

Another important feature of our invention relates to a new and improved suction operated collapsible bellows provided on the filling wheel between lands provided thereon for opening the side walls of the packets to facilitate filling.

Still another important feature of the present invention relates to a new type of cutoff whereby the lands on the filling wheel comprise knife blades which coast with

an upright adjacently disposed knife wheel for cutting the open-ended filled packages from the strip.

Still another important feature of the new apparatus herein disclosed concerns a brake cooperable with a feed roll for varying the position of the film or sheet material to maintain the printing on the film in proper orientation with respect to the vertical sealer so that the vertical seals will be correctly positioned between the printed areas so that the printing will not be out of alignment on the completed package.

Still another important feature of our invention relates to a new device for unloading the formed packages onto an output or discharge conveyor whereby the packages are deposited in shingle fashion thereon to facilitate the subsequent loading of the packages into shipping cartons.

In summary, it is an important objective of this invention to provide a new and improved method and apparatus for the high speed manufacture of filled packages of a high quality type from a continuous length of material.

Further objectives severally are the method of making such filled packages from a strip or strips of material from a series of steps performed thereon, the method of filling the packets during the course of manufacture, the method of cutting off the open-ended packages from the end of the strip material, and the method of sealing such open-ended packages after severance from the strip.

Further objects and advantages will appear from the detailed description and claims to follow, particularly in connection with the accompanying drawings, which illustrate more or less diagrammatically a single strip machine and apparatus for carrying out the new process and producing filled packages.

On the drawings:

FIGURE 1 is a diagrammatic view diagrammatically illustrating our machine;

FIGURE 2 is a top plan view of our machine;

FIGURE 3 is a side view of our machine;

FIGURE 4 is an enlarged fragmentary view of a filling wheel with portions shown in section as viewed on lines IV—IV looking in the direction indicated by the arrows as shown in FIGURE 2;

FIGURE 4A is a front view of a bellows;

FIGURE 5 is an enlarged fragmentary plan view of a mechanism for severing bags or packages from the continuous strip and for sealing the top end thereon;

FIGURE 6 is an enlarged fragmentary top plan view of the filling wheel;

FIGURE 7 is an enlarged fragmentary plan view of the mechanism for vacuumizing the filling wheel as viewed on the line VII—VII looking in the direction indicated by the arrows as seen in FIGURE 4;

FIGURE 8 is an enlarged fragmentary cross-sectional view taken substantially on the section of a mechanism for transmitting an electric signal to a brake when the printing on the strip is out of registry with an electric eye which section is taken substantially along the line VIII—VIII looking along the line indicated by the arrows as seen in FIGURE 2;

FIGURE 9 is an enlarged fragmentary horizontal section taken substantially on the line IX—IX looking in the direction indicated by the arrows as seen in FIGURE 8;

FIGURE 10 is an enlarged fragmentary top plan view of the longitudinal sealer and the mechanism for staggered stacking of the packages;

FIGURE 11 is an enlarged side view of the longitudinal sealer and the mechanism for staggered stacking looking in the direction of the arrows as seen on line XI—XI of FIGURE 10;

FIGURE 12 is a diagrammatic view similar to FIGURE 1 only illustrating the modified form of our machine; and