Nov. 23, 1943. I. L. WILCOX 2,335,202

PAPER CONTAINER BLANK

Filed Jan. 21, 1941

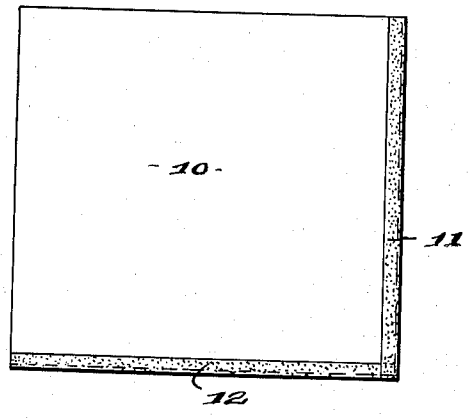


Fig-1-

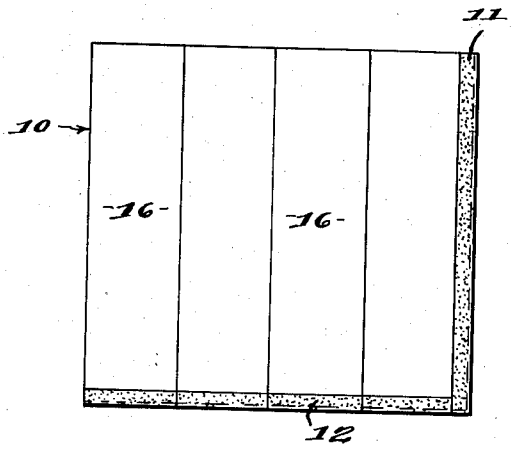


Fig-3-

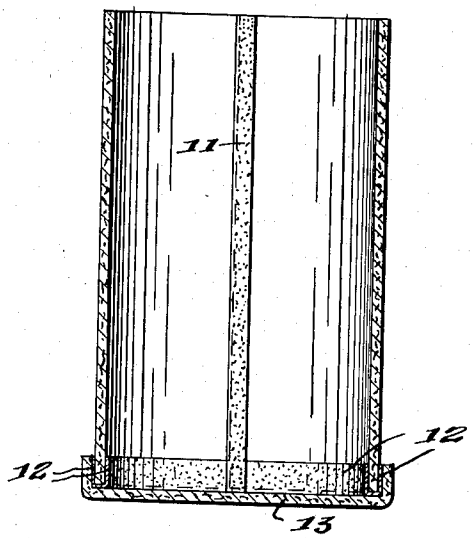


Fig-2-

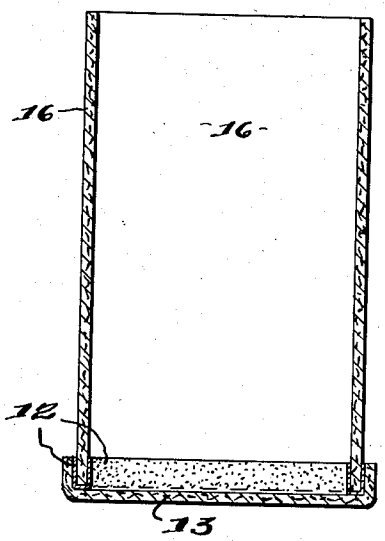


Fig-4-

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PAPER CONTAINER BLANK

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Application January 21, 1941, Serial No. 375,319

3 Claims. (Cl. 229—4.5)

This invention relates in general to containers formed from sheet fibrous material such as paper board and intended particularly for the packaging of liquid products in large volume, such as the packaging of milk.

It is now well understood that paper containers possess certain inherent advantages for the packaging of liquid products in large volume, the package serving only for delivery and as a container for a short period thereafter, usually not exceeding one day.

There are at present two methods employed in fabricating paper containers for dairy use. In some instances the paper containers are completely fabricated at the container manufacturing plant and are shipped to the dairy in completed form. This results in the necessity of shipping containers daily to the dairy inasmuch as the dairy does not have extended storage and handling facilities for maintaining a supply of completed containers on hand. It will be understood that many dairies fill several thousand bottles or containers of milk daily, and the packaging of milk must take place and be completed within a relatively short portion of the day. Accordingly, these daily shipments and the handling of the completed empty containers adds materially to the cost of the package which substantially offsets the advantage of using the paper container.

In other instances, flat blanks are furnished to the dairy and the container is fabricated in the dairy plant by machinery, the process including shaping the blank to container form, applying or forming one or both end closures, coating the container to render the same impervious, and subsequently applying a closure or sealing the open end of the container after the milk has been deposited therein.

This method has some advantage over the first in that the blanks for forming the container and the end closures are shipped in flat form and may accordingly be more conveniently handled and stored in large numbers. However, the machinery for forming the container is comparatively bulky, complicated, and expensive, particularly that portion of the machinery employed for coating the container. This coating consists of wax, the completed containers being immersed in a molten bath of wax, then drained and subsequently cooled to solidify the coating. The draining and cooling operations must of necessity consume an appreciable amount of time, or the machine has to be exceedingly large, and after the container is coated it possesses all of the inherent disadvantages of a wax coated container, the chief one of which is that wax does not form an impervious coating but rather a porous coating, and after the wax is solidified it is easily chipped or broken off from the surface of the container exposing the raw fiber of the board.

There are other substances which effect a much more desirable coating. However, they can only be applied in liquid form when the coating material is dissolved in a strong solvent and accordingly, the use of such materials for coating completed containers is prohibited due to the impossibility of completely evaporating the solvent out of the material after the container has been immersed therein, or the coating applied to the interior of the container. The solvent leaves a strong odor and taste in the container which renders it unfit for packaging milk.

This invention has as an object a paper container formed in the dairy from flat blanks previously processed and coated to make the container entirely impervious, the container construction being such as to require a relatively small high speed container fabricating machine, whereby the problem of storing and handling completed empty containers is avoided and also the problem of wax coating the container after it has been formed in the dairy, and the invention has as a further object the blank from which the body of the container is fabricated, all whereby the blanks are particularly adapted to be most expeditiously shaped and formed into containers by a relatively small machine in the dairy.

The invention consists in the novel features and in the combinations and constructions hereinafter set forth and claimed.

In describing this invention, reference is had to the accompanying drawing in which like characters designate corresponding parts in all the views.

Figure 1 is a plan view of a body blank for a container circular in cross section.

Figure 2 is a vertical sectional view of a container formed from the blank shown in Figure 1.

Figure 3 is a body blank for a container square or rectangular in cross section.

Figure 4 is a vertical sectional view of a container formed from the blank shown in Figure 3.

The blank 10, shown in Figure 1, consists of a piece of paper board of general rectangular shape and of such dimensions as to form a container of the desired size when the blank is shaped to tubular circular form. At least the surface of the blank, which forms the inner surface of the con-

tainer, is coated with a substance rendering the surface of the blank impervious to liquids for which the container is intended.

A tape 11 is permanently secured to one side edge of the blank, and a similar tape 12 is in like manner arranged along the bottom edge of the blank. The tapes 11 and 12 are arranged on the respective edges of the blank and overlie the surface adjacent said edge on opposite or both sides of the blank. The material, from which the tapes 11 and 12 are formed, is impervious and is coated with a thermoplastic material which serves, in the case of the tape 11, to secure the overlapping side edges of the blank together to form the side wall seam of the body of the container, and in the case of the tape 12 to adhesively secure the bottom member 13 to the body of the container.

The material from which the tapes 11, 12 are formed may consist of metal foil coated with a suitable thermoplastic adhesive. However, I have found it more economical to form the tapes directly from such material. For example, the coating on the inner side of the blank and the tapes may be formed from the copolymer of vinyl acetate and vinyl chloride. This material is particularly advantageous for this use inasmuch as it permanently adheres to the paper-board blank when properly applied thereto and thereafter is entirely non-tacky, permitting the blanks so fabricated to be arranged, shipped and handled in stack formation without sticking. In addition, this thermoplastic material is insoluble in most liquids including all food commodities and has been found an excellent impervious coating material for food containers. This coating is relatively flexible and does not chip or peel off the blank during the shaping thereof into tubular form.

The blank shown in Figure 3 is scored vertically to define side panels 16, and is provided with similar side and bottom edge tapes 11, 12. The blanks 10 are shipped to the dairy in flat form and fed into a machine which is operable to shape the blank into tubular form, apply heat to the side tape 11 to secure the overlapping edges of the blank, and a suitable bottom member as 13 applied to the end of the body member and secured thereto by the bottom tape 12 and also by the application of heat. Inasmuch as the blanks are coated and provided with the tapes 11 and 12, a relatively small and economical machine can form the blanks into containers with great rapidity. After the containers are formed, they are filled and a suitable top closure applied.

What I claim is:

1. An article of manufacture, a flat rectangular container body blank adapted to be folded into overlapped convolute tubular form comprising a relatively thick sheet of paper board coated on one side with a thermoplastic substance rendering the coated surface impervious, a tape arranged along and enclosing one side edge and along and enclosing one end edge of the blank and overlying and being permanently secured to the surface on each side of the blank adjacent said edges, said tape being formed of metal foil coated with thermoplastic material and bondable with said coating substance of the sheet by application of heat and serving to secure the overlapped portions of the tubular form together and to secure an end closure in the end of the tubular form.

2. An article of manufacture, a container body blank adapted to be folded into overlapped convolute rigid tubular form comprising a relatively thick sheet of paperboard coated on one side throughout with a thermoplastic coating rendering the coated surface impervious, a tape arranged along one side edge of the blank and overlying and being permanently secured to the surface on each side of the blank adjacent said edge, said tape being formed of like thermoplastic material bonded with said coating material by the application of heat, said taped portion being the inner ply of the overlap and serving to permanently secure the overlapped portions together when the blank is folded into said overlapped tubular form.

3. A paper container body blank adapted to be folded into overlapped convolute rigid tubular form comprising a relatively thick sheet of paperboard coated throughout on one side with a thermoplastic coating rendering the coated surface impervious, a tape arranged along one side edge and along one end edge of the blank and overlying and being permanently secured to the surface on each side of the blank adjacent said edges, said tape being formed with like thermoplastic material bonded with said coating by the application of heat, said taped portion along the side edge of the blank being the inner ply of the overlap and serving to permanently secure the overlapped portions together when the blank is folded into said overlapped tubular form, and said taped portion along the end edge serving to secure an end closure in the end of said tubular form.

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