METHOD OF PACKAGING

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INVENTOR

ATTORNEY
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4 Claims. (Cl. 18—56)

1. The present invention relates to the packaging of materials or articles in plastic foils, etc., and is particularly directed to improvements in the application of such packaging materials in liquid form to the finished product produced thereby.

In the packaging industry it is now well known to apply strip-coating compositions directly to articles or packages requiring protection from moisture, noxious fumes, oxidation or corrosion caused by atmospheric changes or any other deleterious conditions, such as examples as unsanitary handling, as well as from abrasion and ordinary wear and tear encountered in transit or in storage. The skin-tight coverings resulting from the application of the above referred to compositions directly to the article have numerous advantages over the older methods of packaging applying specially treated wrappers such as parchmentized, waxed, glass-lined, or rusticated papers, or foils derived from chemically treated or regenerated cellulose, or those derived from various types of modified rubber or of synthetic elastomers and the like.

The direct application of protective materials to the articles offers not only a great saving in material but it cuts down the volume of air surrounding the packaged item to a minimum, thereby reducing the corrosion and oxidation hazards; it saves shipping and storage space as well as giving full dimensional visibility and enhancing the appearance of the article. Moreover, such direct application of the protective film eliminates the leakage caused by imperfect seams or bulky corners and, last but not least, it obviates the necessity of employing elaborate wrapping and sealing machinery, required for the use of prefabricated envelopes, bags, tubes or similar wrappers.

The strip-coating media most commonly used in the direct application of packaging materials in liquid form fall into three general categories as follows:

1. Hot melts, consisting of plastic compositions, comprising varying proportions of cellulose esters or ethers, plasticizers, oils, waxes, gums or resins, colorants and other modifying agents, all of the components being substantially non-volatile in character, the masses becoming liquid upon the application of the relatively high temperature at which they are applied and solidifying on the articles upon cooling.

2. Liquid coatings, comprising various proportions of plastic matter as above described and volatile organic solvents, the compositions remaining liquid at room temperature and forming films or solid coatings on the articles upon the evaporation of the solvents.

3. Reversible gels, comprising varying proportions of plastic matter and volatile solvents, the compositions being liquefiable at moderate temperature and reverting from this liquid state to a transitory gel stage upon application to the articles, then forming solid coherent films, upon the evaporation of the solvents.

All three types of these above enumerated strip-coating media have the faculty of "knitting," i.e., adhering to themselves whenever seams over-lap, which property is generally taken advantage of in the so-called "double-dipping" process, consisting of immersing one end of the article or package in the coating medium and then dipping the other end to form an over-lapping seam. Wherever seams are undesirable, too costly, or not feasible for any reason whatever, the so-called "single-dip" method may be resorted to, the article being suspended from a cord or any other suitable support and immersed in toto, care being taken that the support be coated as well, part of the way at least, in order to insure a good seal at the point of contact of the latter with the article.

However, this particular method of packaging is subject to certain inherent disadvantages, principally because of the wicking action of the commonly used fibrous cords, which will carry moisture to the coated article. Even plastic strands which are sometimes substituted cannot entirely overcome the wicking action. When metallic filaments are substituted, the wicking action is minimized but there is the difference of contraction and expansion to contend with. Furthermore, since such filaments are fairly rigid, they result in jarring of the seal with frequent breakage thereof when the article is handled.

It is accordingly the primary object of the present invention to provide a method of packaging articles wherein a positive seal of small area is provided which is not subject to any of the above noted disadvantages, thus remaining intact until the coating is deliberately removed and resulting in packaged articles completely enshrouded in a protective coating of substantially uniform thickness over the entire area of the article.

Still further objects of the present invention will become obvious to those skilled in the art by reference to the accompanying drawing wherein:

Fig. 1 is a perspective view of an article prior to application of a protective stripable coating in accordance with the present invention;

Fig. 2 is a cross-sectional view of a dip tank and illustrating the manner of supporting the article during application of the protective stripable coating according to one method of the present invention;

Fig. 3 is a cross-sectional view of the article together with an illustration of a support therefor during application of the protective strip-
pable coating according to another method of the present invention;

Fig. 4 is a view similar to Fig. 3 but showing still another method of applying the protective
strippable coating of the present invention;

Fig. 5 is an elevational view partly fragmentary,
showing the article after coating by any of the
methods illustrated in Figs. 2, 3 and 4;

Fig. 6 is an elevational view showing the step
of sealing the completely coated article, and

Fig. 7 is a perspective view of the completely
coated article with its integral tab formed there-
on in accordance with the present invention.

Although the present invention includes spray-
ning as shown in Fig. 3, brushing as shown in Fig.
4, or any other known method of application of a
protective coating, for the sake of simplicity it will
be described in connection with the so-called dip-
method. Moreover, it will be understood that such
invention applies to any coating composition,
whether it be a hot-melt or a liquid coating
such as a lacquer. I prefer to employ a reversible
gel composition, such as described and claimed
in my copending application Serial No. 628,331,
filed November 13, 1945, now abandoned because
of the desirable characteristics of these latter
types of composition.

In accordance with the present invention, the
article 5 is held at the surface thereof by a readily
removable holder or support such as a magnetized
rod 6 if the article be of metal, or suction at the
end of the support such as shown by the rod 7
of Fig. 3. The article 5 and support 6 are dipped
in the coating material 8 within a dip-tank 9 to
a point on the support 6 slightly above the top of
the article 5. On removal from the bath, the
coating 10 is allowed to solidify by cooling or
evaporation of the solvent, as the case may be,
and the support 6 or 7 retracted from the coated
article 8 with a short
hollow sleeve 12 of plastic attached thereto. This
sleeve 12 may then be heat-sealed by conventional
methods such as heated jaws 13 as shown in Fig.
6, or it may be cemented with solvent or ad-
hesive to thus form a tab 14. The result is a
completely sealed packaged article as shown in
Fig. 7 having a protective coating 10 of substan-
tially uniform thickness enfolding it, with
the small integral tab 14 extending therefrom.
Likewise the tab 14 is similarly formed whether the
article 5 be sprayed as in Fig. 3 or the coating
10 applied by painting as shown in Fig. 4.

The tab thus formed may be subsequently used
as a convenient means for holding the packaged
article in a shipping box or display container.
Moreover, when it is desired to strip the protec-
tive coating from the article when ready for use,
the tab can be cut off without danger of injuring
the article to give a starting point for stripping
the entire coating from the article.
It can thus be seen that a method of applying a
protective plastic coating to an article is herein
provided in which the coating is completely closed
by a positive seal that does not become broken
during handling or storing of the protected
article. I thus obtain an article completely en-
shrouded in a protective plastic envelope prefer-
ably provided with a tear tab. There is no excess
coating material used which contributes consid-
erably to the economy of the present method and
package; the positive long-life seal prevents cor-
rosion, oxidation or spoilage of any kind.

Although one specific embodiment of the pres-
et invention has been shown and described, it
is to be understood that modifications thereof
may be made without departing from the spirit
and scope of the appended claims:

1. A method of packaging articles which com-
prises holding the article by a support of small
surface area in contact with the article, applying
to the article and a portion of the support a coa-
ting of a fluid composition which yields a solid
strippable thermoplastic film on the article after
the lapse of a short period of time following a
cessation in the application of the coating com-
position, stripping the thermoplastic film from
the support to form a sleeve, and sealing the
sleeve to form a tab.

2. A method of packaging articles which com-
prises holding the article by a support in contact
with a relatively small surface area of the article,
spraying the article and a portion of the support
adjacent their areas of contact with a coating of
a fluid composition which yields a solid stripp-
able thermoplastic film on the article after the
lapse of a short period of time following the
spraying thereof, stripping the thermoplastic film
from the support to form a sleeve, and sealing the
sleeve to form a tab.

3. A method of packaging articles which com-
prises holding the article by a support in con-
tact with a relatively small surface area of the
article, brushing the article and a portion of the
support adjacent their areas of contact with a
coating of a fluid composition which yields a solid
strippable thermoplastic film on the article after
the lapse of a short period of time follow-
ing the brushing thereof, stripping the thermo-
plastic film from the support to form a sleeve,
and sealing the sleeve to form a tab on the coated
article.

4. A method of packaging articles which com-
prises depending the article from a rod-like sup-
port in contact with the surface of the article,
dipping the article and a portion of the support
into a bath of fluid coating composition which
yields a solid strippable thermoplastic film on
the article after withdrawal from the bath, re-
moving the article from the bath and allowing
the film to solidify, stripping the coating from
the rod-like support to form a sleeve, and seal-
ing the sleeve to form a tab on the article.

HENRY JENNETT.

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