Jan. 4, 1966 E. A. STEFFEY 3,226,910

METHOD FOR PACKAGING APPLIQUES

Filed Nov. 13, 1964

Fig. 1.

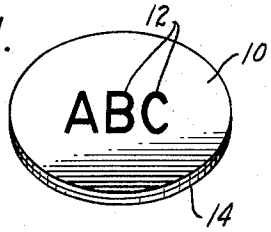
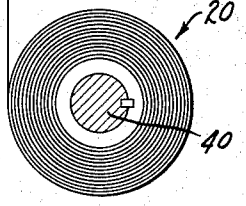


Fig. 2.



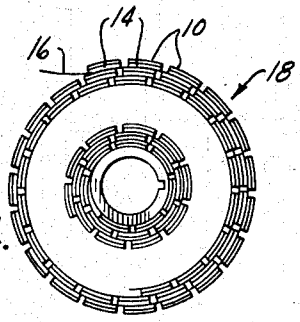


Fig. 4.

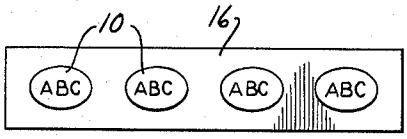


Fig. 5.

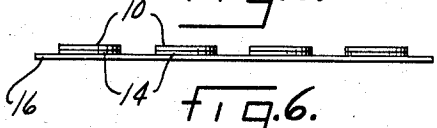


Fig. 6.

Fig. 3.

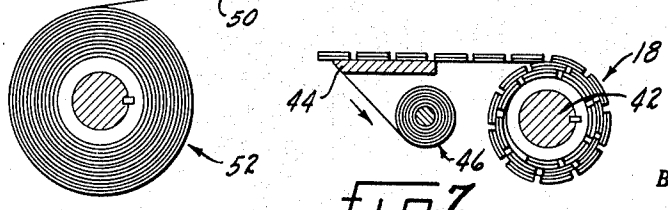


Fig. 7.

INVENTOR.
Edmond A. Steffey,
BY Wolfe, Hubbard,
Voit & Osann
ATTORNEYS.

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METHOD FOR PACKAGING APPLIQUES

Edmond A. Steffey, Chicago, Ill.
(14475 Waverly Ave., Midlothian, Ill.)

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3 Claims. (Cl. 53—3)

This application is a continuation-in-part of my copending application Serial No. 114,478, filed June 2, 1961, now abandoned, entitled "Method for Packaging Appliques."

This invention relates to an improved method for packaging appliques in a continuous roll.

Appliques of different types and made with various base materials on which written designs or ornamentation are superposed are presently in widespread use industrially. One class of such appliques employs flexible materials such as metal foil, plastic, or combinations of metal and plastic as a more durable base material on which the desired information or ornamentation may be permanently dyed or imprinted. An applique of this class is shown in my Patent No. 2,889,233, which discloses a base material of resin coated aluminum foil where the resin coating is imprinted with the desired writing or design. As described in the aforesaid patent, the applique may have a film of adhesive on its reverse side to facilitate fastening it to another article, for example, a metal or plastic machine or object of any kind. This type of applique is used on various manufactured items and is customarily applied to the latter on the production line.

Heretofore in the manufacture of such appliques, one practice followed has been to make sheets of appliques, then to coat the reverse side of each sheet with an adhesive, and finally to cut the sheet with the adhesive backing into the individual appliques. Various types of adhesives have been used, for example, pressure sensitive adhesives, and heat or solvent activated adhesives. With pressure sensitive adhesives, which are available as a film on a liner by the manufacturer, the exposed surface of the adhesive film is applied to the reverse side of the sheet of appliques. The sheet is then cut into the individual appliques which leaves a film of adhesive on the reverse side of each applique with the liner covering the adhesive, it being a simple matter to strip off the liner as a preliminary step to actually applying the applique to the object or article. Similarly, with a solvent activated type of adhesive it has been the practice to apply the adhesive to the reverse side of the sheet of appliques prior to the cutting of the sheet to separate the individual appliques. In either case, the appliques are in the form of separate pieces and must be individually handled to package the latter and when used, as for example, when the appliques are applied to a manufactured article as one of the steps in its production.

One object of the invention is to provide a method for packaging adhesive backed articles on a continuous carrier strip.

More specifically, it is an object of this invention to provide a method for making a continuous roll form of package for articles such as flat flexible appliques, in which the articles may readily be shipped, stored, dispensed, or otherwise handled.

Another object of the invention is to provide a method of the foregoing type which permits the adhesive coated appliques to be stacked vertically for feeding onto the continuous carrier strip without sticking or jamming.

A further object of the invention is to provide such a method which requires an absolute minimum of adhesive. A related object is to provide such a method which enables the appliques to be coated with adhesive prior to their deposition on the continuous carrier strip,

and yet enables that same initial coating of adhesive to be used both to tack the appliques to the carrier strip and to bond the appliques to the desired surface when they are ultimately removed from the carrier strip.

Other objects will appear from the following description taken in connection with the accompanying drawings wherein:

FIGURE 1 is a perspective view of an illustrative design bearing applique with adhesive applied to the reverse side;

FIG. 2 is a diagrammatic view illustrating the method of packaging appliques as shown in FIGURE 1, in continuous rolls;

FIG. 3 is a diagrammatic view illustrating an alternative method of packaging appliques in continuous rolls;

FIG. 4 is a view in side elevation of a roll of appliques;

FIG. 5 is a plan view of a strip of liner with appliques attached;

FIG. 6 is a view in side elevation of the strip of liner shown in FIG. 5; and

FIG. 7 diagrammatically illustrates means for dispensing appliques packaged in continuous rolls.

While the invention has been described in connection with the preferred embodiment, it will be understood that it is not intended to be limited to such embodiment but is intended to include all modifications, alternative constructions and equivalents which are included within the spirit and scope of the appended claims.

Referring to FIGURES 1, 2 and 4, appliques **10** shown in FIGURE 1 having a design or ornamentation **12** on one side or face and heat or solvent activatable adhesive **14** applied to the reverse side, are attached to a web **16** and packaged in continuous rolls **18** of FIG. 2, and such rolls **18**, as shown in FIG. 4, provide a convenient package for the individual appliques which may readily be separated from the roll web **16**. Adhesives which are satisfactory for carrying out the invention include commercially available adhesive with a synthetic rubber base such as a GRS base adhesive sold by Minnesota Mining & Manufacturing Company as No. 583. This adhesive has a base of synthetic elastomers plus thermoplastic and thermosetting resins to give the requisite properties with respect to activation by heat or solvent. A ketone may be used for a solvent. Another satisfactory adhesive is a heat or solvent activatable adhesive sold by Pyroxlin Products, Inc., as No. 37–164–8, this adhesive having a base of vinyl and synthetic rubber. A ketone may be used for a solvent for this adhesive, also. Other heat or solvent activated adhesives may be used and the invention is not limited to these two adhesives.

Following the method of this invention, therefore, a film of heat or solvent activatable adhesive **14** is applied to one side of each applique **10**, in any desired manner. For example, in the case of appliques such as shown in FIGURE 1, which are customarily printed in sheets, adhesive may be bonded to the reverse side of the sheet and then individual appliques **10** cut from the sheet by slitting, die cutting, or in any other way.

In accordance with one important aspect of this invention, the coating of heat or solvent activatable adhesive is initially applied to the appliques in such a way as to maintain the adhesive in a reactivatable condition, i.e., without permanently setting the adhesive, and the adhesive coating is then dried prior to the placement of the appliques on the continuous carrier strip. Each applique **10** so prepared includes an inactive or dry, reactivatable, adhesive film **14** on one side and may be arranged in a vertical stack, as shown in FIG. 2, without sticking together. From this supply, the appliques **10** are individually placed in series fashion on a continuous web or liner **16**. Said web **16** moves continuously from a supply roll **20** to a rewind spindle **22** on which the web

16, with appliques 10 affixed thereto as will be hereinafter described, is wound in the roll 18. As herein shown, the web 16 is a liner treated or coated with a release material which facilitates ready release of the adhesive 14 on the appliques 10. Such treated liners are well known and commercially available, and are selected according to the adhesive used. For example, a satisfactory liner is provided by parchment or kraft paper treated with known release materials such as a stearate "Quilon," or various silicones.

In the method diagrammatically shown in FIG. 2, when the precoated appliques 10 are first received on the continuously moving web 16, there is no adhesion between the adhesive film 14 on the reverse side of the appliques and the liner. According to this invention, such appliques 10 are attached to the web 16 by passing the web and the adhesive-backed appliques carried thereby between a pair of pinch rollers 24, 26, one of which, the lower one 26 in this case, is a heated roller, so as to reactivate the adhesive 14 on each applique 10 to lightly tack or adhere the appliques on the treated web 16. It is important that this reactivating step be carried out without heating the adhesive sufficiently to permanently set the adhesive so that the adhesive is maintained in a reactivatable condition. It has been found that with the specific adhesives mentioned above, a low temperature sufficiently softens the adhesive film to obtain a satisfactory bond and care is required to avoid excessive heat to an extent that the entire film is cured as a result. With a web speed of up to 20 feet per minute, roll temperatures of between 150°–250° F., adjusted according to the particular web speed have been used with satisfactory results with the adhesives specified hereinbefore. The web 16 with the attached appliques is wound in a roll completing the continuous roll package.

Still referring to FIG. 2, the web 16 extends from the supply roll 20 over a roller 30 and horizontally along a table 32 providing a flat support surface. Over the web provision for feeding the appliques from a source of supply is provided, herein shown as a receptacle or hopper 34 having a feed mechanism 36, which may be automatically operated, by means of which the appliques 10 are fed seriatum onto the surface of the web 16. The web 16 should, preferably, be wider than the appliques. For example, a 2½ inch wide liner may be used for the web 16 with the appliques arranged in one or more parallel rows, or perhaps individually staggered depending on the size and shape of the appliques. Preferably, the web 16 is drawn through the machine under tension and for this purpose the rewind arbor 22 may be power driven while the supply spindle or arbor 40 may be braked so as to provide uniform tension.

It will be appreciated at this point that appliques coated with the conventional pressure sensitive adhesives could not be used in the method of this invention. Thus, if the appliques 10 stacked in the hopper 34 were coated with pressure sensitive adhesive, they would stick together and could not be fed onto the continuous web 16. By initially coating the appliques with a heat or solvent activatable adhesive, which is dried prior to placing the appliques in the hopper, the method of this invention permits the coated appliques to be stacked and fed onto the web with no sticking or jamming whatever.

An alternative method for packaging articles in continuous roll form is shown diagrammatically in FIG. 3, it being understood that the apparatus shown is exemplary and other apparatus may be used. Following this alternative method, a supply of adhesive-backed appliques is provided in the form of a hopper or receptacle 48 of appliques 10 each of the form shown in FIGURE 1, having a layer of dry heat or solvent activatable adhesive 14 on the reverse side. Adhesives of the type heretofore specified have been found satisfactory. Each applique 10 is placed on the continuous web 50 moving from a supply roll 52 to a rewind roll 54, by a feed mechanism 56, which may be automatically operated, by means of which the appliques 10 are removed from the receptacle and transferred to the tape. In accordance with this aspect of the invention, the adhesive on each applique 10 is activated prior to the applique being placed on the liner. For this latter purpose the feed mechanism 56 includes a first pair of resilient rollers 57 which positively feeds each applique to a second pair of rollers 58 and the web 16 which is drawn over the lower roller 59 of this second pair. The lower roller 60 of the first pair is a resilient transfer roller for solvent in the reservoir 61, the transfer roller 60 receiving solvent from a roller 62 in the reservoir. This application of solvent to each applique causes the adhesive thereon to be activated so that the applique is tacked or adheres to the web. The web 50 with attached appliques 10 is fed subsequently through an air drier 65 or similar arrangement to dry the adhesive, and finally the web 50 with attached appliques 10 is wound on the rewind spindle 64 to complete the roll package.

As in the case of the process described above in connection wtih FIG. 2, it is important that the process of FIG. 3 be carried out in such a way as to maintain the adhesive coatings on the appliques in a reactivatable condition, i.e., without permanently setting the adhesive. Thus, the time and temperature conditions of the drying treatment effected by the drier 65 must be carefully adjusted to avoid permanently setting the adhesive.

Still referring to FIG. 3, as in the case of the diagrammatic showing of FIG. 2, the web 50 of release agent treated material extends from the supply roll 52 to the rewind spindle 64. The supply of appliques 10 is provided in the form of a receptacle or hopper 48 mounted over the web. While an air drier 65 is shown for illustrative purposes, however, any means for driving off the solvent and drying the activated adhesive film may be used as desired.

A roll of appliques 10, prepared by the process of FIG. 2 or FIG. 3, is shown in FIG. 4. A strip or fragment of liner with attached appliques 10 is shown in FIGS. 5 and 6. The individual appliques may be removed from the web as shown in FIG. 7, which depicts diagrammatically a dispensing machine. Thus the roll 18 of appliques 10 is slipped onto the spindle 42 of the dispensing unit. The liner is threaded over a beveled edge 44 to a driven rewind roll 46. It will be seen that the adhesion is broken between the treated web 16 and the adhesive on the back of an applique 10 when the rewind roll 46 is driven, at the control of a production worker, for example, to draw the web 16 over the beveled edge 44. Appliques 10 are thus presented to the worker for application to another article. Without such as dispensing unit, the individual appliques 10 may be merely stripped from the web 16 and made ready for use. The procedure followed in using the appliques depends on the type and character of the adhesive used. However, the appliques, whether on a strip or on a roll, are easily handled in quantity and dispensed therefrom.

In order to apply the appliques to the desired product surface, the adhesive coating thereon must again be reactivated. Where the reactivation is effected by heating, the adhesive may be reactivated either before or after applique is removed from the carrier strip. Where the reactivation is effected by a solvent, it is done after the appliques are removed. Regardless of the particular method used to reactivate the adhesive, the applique may be subjected to a final heating treatment, after it has been applied to the desired product surface, to permanently set the adhesive.

As can be seen from the foregoing description, the present invention provides an improved method for packaging adhesive coated appliques on a continuous carrier strip which may be wound into a continuous roll in which the appliques may be readily shipped, stored, dispensed, or otherwise handled. The method of this invention requires an absolute minimum of adhesive and manipulative steps, and permits the adhesive coated appliques to be stacked

vertically for feeding onto the continuous carrier strip without sticking or jamming. Moreover, the appliques may be coated with adhesive prior to their placement on the continuous carrier strip, and yet that same initial coating of adhesive may be used both to tack the appliques to the carrier strip and to bond the appliques to the desired surface when they are utimately removed from the carrier strip. Furthermore, since the adhesive is applied to the appliques initially prior to their placement on the carrier strip, the appliques may be placed extremely close to each other on the carrier strip thereby substantially increasing the number of appliques which can be packaged on any given length of carrier strip, and without any danger of the adjacent appliques sticking to each other to hinder the dispensing operation.

I claim as my invention:

1. The method of packaging appliques in a continuous strip, each of said appliques having a coating of heat and solvent activatable adhesive on the underside thereof, which method comprises the steps of taking a continuous liner treated with a release agent for ready release of said adhesive and moving said strip longitudinally and horizontally, feeding said appliques in series fashion on to the upper surface of said liner while said adhesive on the undersides of said appliques is in a non-activated condition and with said adhesive in contact with said liner, activating the adhesive on each applique from the underside thereof by applying heat to the underside of each applique as the respective applique is fed onto said liner to activate the adhesive on each applique and thereby removably attach the appliques by means of said adhesive to said liner, drying the heat activated adhesive on said appliques without heating the adhesive sufficiently to permanently set the same so as to maintain said adhesive in a reactivatable condition for subsequent application of the appliques to a desired surface by means of the reactivated adhesive, and winding the continuous liner with attached appliques into a roll.

2. The method of packaging appliques in a continuous strip, each of said appliques having a coating of heat and solvent activatable adhesive on the underside thereof, which method comprises the steps of taking a continuous liner treated with a release agent for ready release of said adhesive and moving said strip longitudinally and horizontally, feeding said appliques in series fashion onto the upper surface of said liner while said adhesive on the undersides of said appliques is in a non-activated condition and with said adhesive in contact with said liner, activating the adhesive on each applique from the underside thereof by applying solvent to the underside of each applique as the respective applique is fed onto said liner to activate the adhesive on each applique and thereby removably attach the applique by means of said adhesive to said liner, and drying the solvent activated adhesive on said appliques without heating the adhesive sufficiently to permanently set the same so as to maintain said adhesive in a reactivatable condition for subsequent application of the appliques to a desired surface by means of the reactivated adhesive, winding the continuous liner with attached appliques into a roll.

3. The method of packaging appliques in a continuous strip comprising the steps of coating the undersides of a plurality of appliques with a heat activatable adhesive without permanently setting said adhesive so as to maintain the adhesive in a reactivatable condition, inactivating the adhesive coatings on said appliques and arranging the coated appliques in a vertical stack with the adhesive on the underside of each applique engaging the upper surface of an adjacent applique without sticking thereto, taking a continuous liner treated with a release agent for ready release of said adhesive and moving said liner longitudinally and horizontally, feeding the appliques from said vertical stack in series fashion onto the upper surface of said liner with the inactive adhesive on the undersides of said appliques in contact with the liner, reactivating the adhesive on each applique sufficiently to tack the appliques to the release treated liner without heating the adhesive sufficiently to permanently set the same so as to maintain the adhesive in a reactivatable condition for subsequent application of the appliques to a desired surface by means of the reactivated adhesive, and winding the continuous liner with attached appliques into a roll.

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FRANK E. BAILEY, *Primary Examiner.*