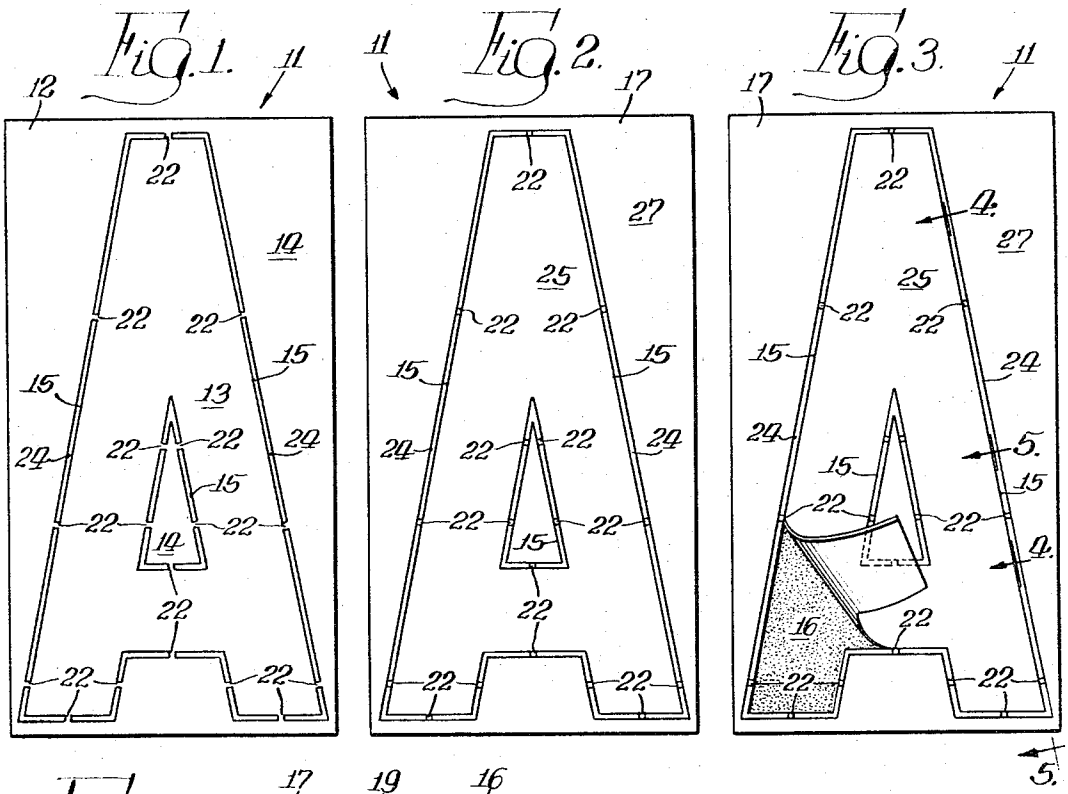
Jan. 10, 1967 C. J. JAHP 3,297,508

DRY STRIP DECALCOMANIA OR TRANSFER AND METHOD OF USE

Filed Dec. 10, 1962



INVENTOR.
Clifford J. Jahp,
BY
Hibben, Noyes & Bicknell
Attys.

United States Patent Office 3,297,508 Patented Jan. 10, 1967

3,297,508

DRY STRIP DECALCOMANIA OR TRANSFER AND METHOD OF USE

Clifford J. Jahp, Batavia, Ill., assignor to The Meyercord Co., Chicago, Ill., a corporation of Illinois

Filed Dec. 10, 1962, Ser. No. 243,572
9 Claims. (Cl. 156—249)

This invention relates to improved decalcomanias and their method of use and also to the method for making the same. More particularly, this invention relates to a novel dry strip decalcomania having a die cut indicia or design portion, to the construction of the die used in making the same, and to the steps involved in making the decalcomania and in the application of the indicia or design portion of the decalcomania to a surface.

One of the objections heretofore expressed by users of transfers or decalcomanias of early design was the necessity for using water or other solvents for effecting a release of the design layer from the backing sheet. To overcome this, dry strip decalcomanias were developed which employ a normally pressure sensitive type adhesive for securing the design layer to a surface. Decalcomanias of the latter type may comprise a sheet of material or film having the design or indicia printed or otherwise applied to one side thereof, a coating of pressure sensitive material on the opposite side of the sheet, and a removable backing engaging the adhesive coated side of the sheet and adapted to be stripped off during use of the decalcomania.

Some difficulty has been experienced in the application of the dry strip pressure sensitive type decalcomania in that once the protective backing is removed from the pressure sensitive material, handling of the indicia or design portion becomes difficult due to unavoidable contact with the exposed pressure sensitive material. Such contact with the pressure sensitive material also reduces its adhesive qualities, and, if the sheet or film should become folded upon itself, it becomes useless.

Accordingly, it is a general object of the present invention to provide an improved dry strip decalcomania employing a pressure sensitive adhesive which overcomes the aforementioned disadvantages.

Another object of the invention is to provide a novel and improved die cut decalcomania or transfer which utilizes a pressure sensitive type adhesive and in which application of the design or indicia portion of the decalcomania to a surface is facilitated.

A further object of the invention is to provide novel die construction for use in forming a decalcomania of the type herein described.

Still another object of the invention is to provide novel methods of making and using a decalcomania of the type herein described.

Other objects and advantages of the invention will become apparent upon making reference to the detailed description which follows and the accompanying drawing, in which:

FIG. 1 is a plan view of the front or indicia carrying side of a die cut decalcomania embodying the features of the present invention, the lines of severance between the bounding edges of the indicia and the marginal material of the sheet being exaggerated for clarity;

FIG. 2 is a view, similar to FIG. 1, of the reverse or backing sheet side of the decalcomania;

FIG. 3 is a view similar to FIG. 2, and showing the backing sheet in the process of being removed from the rear side of the decalcomania;

FIG. 4 is an enlarged fragmentary sectional view taken substantially along the line 4—4 of FIG. 3;

FIG. 5 is a sectional view taken along the line 5—5 of FIG. 3 and showing also in side elevation a portion

of a cutting die embodying the features of the present invention and as the die would appear upon completion of the cutting of the decalcomania;

FIG. 6 is a fragmentary side elevational view of a portion of the cutting die illustrated in FIG. 5;

FIG. 7 is a sectional view taken along the line 7—7 of FIG. 6;

FIG. 8 is a perspective view of the rear or backing sheet side of the decalcomania as the latter would appear prior to application to an object or surface;

FIG. 9 is a perspective view of the decalcomania of FIG. 8 as the latter would appear after application to an object and with a portion of the marginal material of the decalcomania in the process of being removed; and

FIG. 10 is an enlarged fragmentary sectional view taken substantially along the line 10—10 of FIG. 9.

Briefly described, the present invention contemplates an improved die cut decalcomania wherein a novel construction is employed which facilitates application of the indicia or design portion thereof to an object by a novel method. Although the invention is not limited to such use, the decalcomania is particularly useful for applying preformed letters or numerals such as in making signs or the like. The decalcomania, hereinafter described in detail, includes a front or indicia carrying sheet or film having the indicia to be transferred printed or otherwise applied thereto. The indicia carrying film is mounted on a backing sheet. An adhesive coating, in this instance of the pressure sensitive type, is provided on the rear side of the front sheet or film, and an adhesive resistant release coating is provided on the front or engaging face of the backing sheet so that the backing sheet is easily removable by dry stripping.

The indicia portion of the decalcomania is made readily separable from the remainder of the decalcomania by partial severing of the indicia carrying sheet and complete severing of the backing sheet along the outer periphery or bounding edges of the indicia. This is accomplished by a novel cutting die which is formed to the shape of the bounding edges of the indicia and which is provided with a plurality of spaced recesses or notches in the cutting edges thereof to prevent complete severance of the indicia from the marginal material of the front sheet. The minute connecting portions or tabs formed by the notches in the cutting edges of the die are readily disruptable upon removal of the marginal material.

A novel method of application of the aforementioned decalcomania is also contemplated by the present invention. Such method includes the steps of selectively removing the wholly severed portion of the backing sheet within the bounding edges of the indicia, placing the decalcomania on the object or surface so that the exposed adhesive on the rear side of the indicia carrying sheet contacts the object or surface, applying sufficient pressure to the front face of the decalcomania to affix the die cut indicia to the object, and thereafter selectively removing the remaining marginal or waste material of the decalcomania to break the connecting tabs between the die cut indicia and the remainder of the front sheet.

In FIGS. 1 and 2, a decalcomania **11** embodying the features of the present invention is illustrated. The decalcomania **11** comprises a front or indicia carrying sheet or film **12** upon which indicia **13** to be transferred, in this instance the capital letter A, is printed or otherwise affixed. The sheet **12** is preferably a self-sustaining organic resinous or plastic film such as polyvinyl chloride or a polyester film. The sheet **12** is of a rectangular shape and is somewhat larger than the indicia **13** to provide marginal material **14** disposed outside of the bounding edges, indicated at **15**, of the indicia **13**. A pressure sensitive adhesive coating **16** (FIG. 3) is provided on the

entire rear side of the sheet **12**, including both the indicia portion **13** and the marginal portion **14**. Any suitable pressure sensitive material may be used such as an acrylic resin base or a rubber base material. The thickness of the adhesive coating may be on the order of .001 inch.

In order to cover the adhesive **16** prior to use of the decalcomania and to support the indicia carrying sheet **12** for handling, the sheet **12** is mounted on a backing or support sheet **17** (FIG. 2). The backing sheet **17** is of the same size and shape as the sheet **12** and may be of heavy paper, cardboard, or the like. Because the rear side, indicated at **18** (FIG. 4), of the indicia carrying sheet **12** is coated with the pressure sensitive adhesive **16**, the front or engaging side, indicated at **19** (FIG. 4), of the backing sheet **17** must be coated with an adhesive resistant or release material, such as a silicone composition or the like, in order to provide a readily disruptable bond between the sheets **12** and **17** and thereby allowing the backing to be dry stripped, as hereinafter described.

In the manufacture of the decal it will usually be most convenient to apply the pressure sensitive adhesive coating **16** against the release side **19** of the backing sheet **17**. Thereafter, the preformed film **12** is laminated with the adhesive coated backing, and the film side **12** of the composite article is then imprinted with the indicia **13**. However, it will be understood that other sequences of operations may also be followed up to this point. The laminated and imprinted article is now subjected to a novel die cutting operation in which the material of the front sheet **12** is severed along the bounding edges **15** of the indicia **13** except for a plurality of spaced integral connecting portion or restricted tabs **22** which span the die cuts or lines of severance, indicated at **24**, in the decal and backing sheets **12** and **17**, respectively. The width of the uncut tabs **22** and the die cuts **24** have been exaggerated in the drawing for clarity and better understanding of the invention. In the die cutting step, the backing sheet **17** is wholly severed along the bounding edges **15** of the indicia **13** so that a portion, indicated at **25** in FIGS. 2 and 3, of the backing sheet **17** disposed within the bounding edges **15** and engaging the partially severed indicia **13** is completely disconnected from the remainder of the backing sheet. The marginal material of the backing sheet **17** disposed outside the disconnected portion **25** is indicated at **27**.

In order to provide for the complete severance of the portion **25** from the backing sheet **17** but only partial severance of the indicia portion **13** from the indicia carrying sheet **12**, a novel die construction is used. A portion **30** of such a die is illustrated in FIGS. 5–7, inclusive, and is of the "steel-rule" type. The material of the die, which is of elongated ribbon-like form, is arranged on edge and mounted in grooves (not shown) having the same shape as the bounding edges **15** of the indicia **13**, the grooves being formed in a plate-like base or support (also not shown). The elongated free edges of the various die parts **30** are bevelled or sharpened, as at **31**, to provide a cutting edge **32**. The die parts **30** are mounted so that the cutting edges **32** lie in the same plane. Thus, all the cuts or lines of severance **24** are formed at one time.

As best seen in FIGS. 5 and 6, each cutting edge **32** is provided with a plurality of recesses or notches **34** which are generally V-shaped in the plane of the elongated edge **32**. The notches **34** have a depth substantially equal to the thickness of the indicia carrying sheet **12** and a width such as to provide a longitudinal gap of about $\frac{1}{32}$ of an inch in the elongated edge **32**. The uninterrupted lengths of the cutting edge **32** are adapted to cut through completely both the backing sheet **17**, adhesive layer **16** and the indicia carrying sheet **12**, as shown in FIG. 5, it being understood that the die cut is made from the backing side of the composite article. However, the notched areas **34** are designed to accomplish cutting of the backing sheet **17** but not the indicia carrying sheet **12**. Consequently, in order to obtain the desired partial cutting in the notched areas of the die **30**, each of the angular opposed sides or legs of the V-shaped notch is also bevelled, as at **35** (FIG. 7), to provide sharp angular cutting edges **36** in the notch **34**, the cutting edges **36** being in alignment with and forming a continuation of the main cutting edge **32**.

Thus, when the die **30** is advanced into the decalcomania **11** from the rear or backing sheet side thereof, the cutting edges **32** and **36** pass completely through the material of the backing sheet **17** in the manner illustrated in FIG. 5. Moreover, the cutting edges **32** also pass completely through the indicia carrying sheet **12** but the V-shaped cutting edges **36** do not completely sever the sheet **12**.

The material of both sheets will thus be severed throughout the extent of the die parts **30**, except for the areas at the notches **34** where only the material of the backing sheet **17** is severed. Thus, upon withdrawal of the die, the connecting portions or uncut tabs **22** will remain to support the indicia **13** and the wholly severed portion **25** of the backing sheet **17**. As seen in FIGS. 4 and 5, the connecting tabs **22** have a generally triangular cross-sectional shape conforming to the configuration of the notches **34** in the die **30**. As heretofore indicated, the width of the tabs **22** at the outermost side of the sheet **12** is on the order of $\frac{1}{32}$ of an inch and the depth of the tabs **22** corresponds to the thickness of the sheet or film **12**. For example, a film thickness of from about .002 to about .006 inch will ordinarily be used, the exact thickness being dependent upon the choice of material for the sheet **12** and the intended use of the decalcomania. In addition, the notches **34** are arranged along the cutting edges **32** of the die **30** so that the tabs **22** are located at points spaced about $\frac{3}{8}$ of an inch from any sharp angular or corner portion of the indicia with as few additional tabs as possible in other areas.

Assuming that a user wishes to apply the indicia **13** to an object having a surface, such as the surface **40** illustrated in FIG. 9, the method of application is as follows. Before the decalcomania **11** is brought into proximity to the surface **40**, the wholly severed portion **25** of the backing sheet is removed from the rear side of the decalcomania to expose the adhesive **16** on the indicia **13**. This may be done by bending a corner or angular portion of the wholly severed indicia portion **13** and partially severed backing portion **25** between an adjacent pair of tabs **22** so that the indicia portion **13** bends toward itself. Such bending causes the indicia portion **13** of the vinyl sheet to separate from the backing sheet portion **25** to permit the latter to be peeled away in the manner illustrated in FIG. 3. Alternatively, such operation may be accomplished by inserting a finger nail or other sharp object in a cut **24** and thereafter peeling the portion **25** away from the pressure sensitive material. When the portion **25** has been completely removed, the decalcomania is placed over the surface **40**, face up, and with the exposed pressure sensitive material **16** disposed toward the surface, as illustrated in FIG. 8. Thereafter, sufficient pressure is applied to the outer surface of the decalcomania to assure a bond between the surface **40** and the adhesive **16** on the indicia **13**.

Subsequently, the laminated marginal material **14**, **27** is removed as a unit by withdrawal thereof from the affixed indicia **13** and surface **40**, in the manner illustrated in FIGS. 9 and 10. Such action causes disruption or breakage of the tabs **22** leaving the indicia **13** affixed to the surface **40**. Thus, it will be understood that the uncut tabs **22** are of such size that the indicia **13** remains connected to the marginal portion **14** of the sheet **12** during the initial stripping and affixing steps shown in FIGS. 3 and 8 but the tabs **22** are weak enough to be readily broken during the final step of removing the waste material as shown in FIGS. 9 and 10. The required number

and location of the tabs 22 will, of course, depend on the size and configuration of the die-cut indicia 13.

While only one specific embodiment of the invention has been herein illustrated and described, it will be understood that modifications and variations may be effected without departing from the scope of the invention as set forth in the appended claims.

I claim:

1. A decalcomania comprising a sheet of material having indicia on one side thereof, a coating of pressure sensitive adhesive material at the other side of the indicia carrying sheet, a backing sheet disposed against said adhesive material, said indicia carrying and backing sheets being of greater size than said indicia to provide marginal material therearound, said backing sheet being wholly severed along the bounding edges of the indicia, said indicia carrying sheet being substantially severed along the bounding edges of the indicia thereon except for a plurality of uncut connecting portions connecting the marginal material thereof with the substantially severed portion, said adhesive material on said substantially severed portion of said indicia carrying sheet being exposable for affixing the latter to an object upon removal of the wholly severed portion of said backing sheet, and the marginal material of said indicia carrying and backing sheets being thereafter separable from the affixed indicia by disruption of said connecting portions.

2. The decalcomania of claim 1 further characterized in that each of said connecting portions is substantially V-shaped, in cross section, with the apex of the V disposed toward said backing sheet.

3. The decalcomania assembly of claim 2 further characterized in that said V-shaped portions are about 1/32 of an inch wide at the outer surface of said indicia carrying sheet and extend through the thickness of said indicia carrying sheet.

4. A decalcomania comprising a film of organic plastic material having indicia imprinted on one side thereof, said film being of greater size than said indicia to define marginal material therearound, the other side of said film having a pressure sensitive adhesive material disposed thereagainst, and a backing sheet releasably engaging said adhesive material and overlying said film, said backing sheet being wholly severed along the bounding edges of said indicia, and said film being substantially severed along said bounding edges except for a plurality of restricted connecting portions connecting said indicia with the marginal material thereof, whereby said indicia may be affixed to an object before separation from said decalcomania by removal of that portion of the backing sheet within the bounding edges of the indicia and engagement of the exposed adhesive material with the object, the marginal material of the film and backing sheets being thereafter separable by disruption of said connecting portions.

5. A laminated article of the class described comprising a pair of superimposed indicia carrying and backing sheets with a layer of pressure sensitive adhesive material therebetween, said indicia carrying sheet having indicia at the outermost side thereof and said backing sheet being readily strippable from said adhesive material, said article having die cuts for separating the indicia area of the article from surounding waste material, said die cuts extending fully through said backing sheet and entirely around the periphery of said indicia, and said die cuts also extending fully through said indicia carrying sheet and around the periphery of said indicia except for a plurality of restricted uncut tabs in said indicia carrying sheet spaced around the periphery of said indicia for disruptably connecting the indicia portion of the indicia carrying sheet to the surounding waste material thereof.

6. The article of claim 5 further characterized in that said indicia carrying sheet comprises an organic plastic film, said indicia comprises an imprinted letter or numeral, and said backing sheet comprises a paper sheet having a release coating on the side thereof engaging said adhesive material.

7. The method of making a die cut decalcomania of the class described comprising forming a laminate having a pair of superimposed indicia carrying and backing sheets with a layer of pressure sensitive adhesive material therebetween, said indicia carrying sheet having indicia at the outermost side thereof and said backing sheet being readily strippable from said adhesive material, and impressing die cuts in said laminate from the backing sheet side thereof, said die cuts extending fully through said backing sheet and entirely around the periphery of said indicia, and said die cuts also extending fully through said indicia carrying sheet and around the periphery of said indicia except for a plurality of restricted uncut tabs in said indicia carrying sheet spaced around the periphery of said indicia for disruptably connecting the indicia portion of the indicia carrying sheet to the remainder thereof.

8. The method of applying indicia to an object by means of a laminated decalcomania having a pair of superimposed indicia carrying and backing sheets with a layer of pressure sensitive adhesive material therebetween, said indicia carrying sheet having an indicia portion at the outermost side thereof and said backing sheet being readily strippable from said adhesive material, said sheets being of larger size then said indicia portion so as to provide waste material in said sheets around said indicia portion, said backing sheet having a completely severed portion extending around the entire periphery of said indicia portion, and said indicia portion of said indicia carrying sheet being completely severed around the periphery thereof except for a plurality of restricted connecting portions spaced around the periphery of said indicia portion for disruptably connecting the latter to the surrounding waste material of said indicia carrying sheet; said method comprising the steps of removing said completely severed portion of said backing sheet and thereby exposing adhesive material overlying said indicia portion, pressing the decalcomania against the surface of the object to adhere the exposed adhesive material to said surface, and thereafter removing as a laminated unit the waste material of said sheets thereby breaking said connecting portions and leaving said indicia portion adhered to said surface.

9. The method of applying indicia to an object which comprises: forming a laminated decalcomania having a pair of superimposed indicia carrying and backing sheets with a layer of pressure sensitive adhesive material therebetween, said indicia carrying sheet having an indicia portion at the outermost side thereof and said backing sheet being readily strippable from said adhesive material, said sheets being of larger size than said indicia portion so as to provide waste material in said sheets around said indicia portion; impressing die cuts in said decalomania from the backing sheet side thereof, said die cuts extending fully through said backing sheet and entirely around the periphery of said indicia portion, and said die cuts also extending fully through said indicia carrying sheet and around the periphery of said indicia portion except for a plurality of restricted uncut tabs in said indicia carrying sheet spaced around the periphery of said indicia portion for disruptably connecting the indicia portion of the indicia carrying sheet to the surrounding waste material thereof; removing the fully die cut portion of said backing sheet overlying said indicia portion and thereby exposing the adhesive material on said indicia portion of said indicia carrying sheet; pressing the decalcomania against the surface of the object to adhere the exposed adhesive material to said surface; and thereafter removing as a laminated unit the waste material of said sheets thereby breaking said tabs and leaving said indicia portion adhered to said surface.

(References on following page)

References Cited by the Examiner

UNITED STATES PATENTS

1,573,295	2/1926	Bourgeois	156—248
2,114,411	4/1938	Wesselman	83—9
2,122,368	6/1938	Engler	83—9
2,419,918	4/1947	Sheetz	156—89
2,436,111	2/1948	Lowe	83—9
2,596,179	5/1952	Seymour	206—39

2,920,009	1/1960	Humphner	156—240
2,941,916	6/1960	Akkeron	156—240

FOREIGN PATENTS

880,632	10/1961	Great Britain.

EARL M. BERGERT, *Primary Examiner.*

R. I. SMITH, M. L. KATZ, *Assistant Examiners.*