Oct. 1, 1940. B. ASNES 2,216,289

DECALCOMANIA TRANSFER

Filed Dec. 10, 1938

Fig. 1

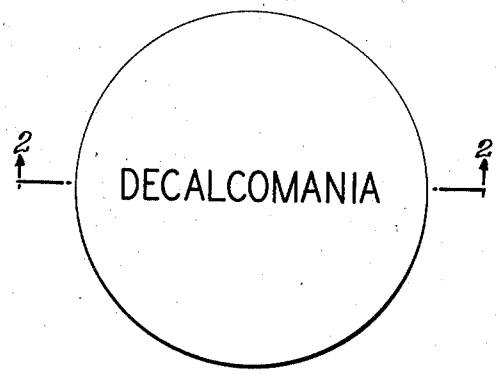


Fig. 2

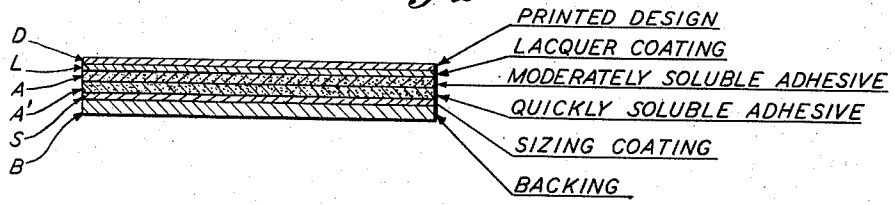


Fig. 3

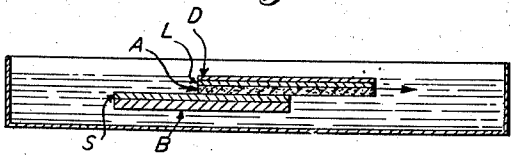
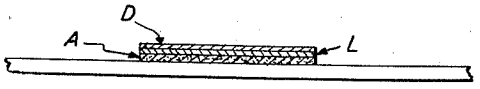


Fig. 4



Inventor:
Benjamin Asnes,
by Roberts, Cushman & Woodberry,
his Attys.

Patented Oct. 1, 1940

2,216,289

UNITED STATES PATENT OFFICE

2,216,289

DECALCOMANIA TRANSFER

Benjamin Asnes, Framingham, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass., a corporation of Massachusetts

Application December 10, 1938, Serial No. 244,895

4 Claims. (Cl. 41—33)

In the manufacture of decalcomania transfer paper it is customary first to coat the paper with a sizing to prevent the subsequent coating of adhesive from striking into the paper, then to apply the adhesive coating and finally to apply the transfer design by repeated printings. The printings may be applied directly to the adhesive coating or to an intermediate lacquer coating applied over the adhesive. Without the lacquer coating a great many printings are required to give the transfer sufficient body to hold together while being transferred from the backing to its permanent mount, whereas the lacquer coating supplies the necessary strength irrespective of the number of printings.

To transfer the designs the paper is soaked in water until the adhesive coating is softened sufficiently to permit the design to be slipped or peeled off the backing, after which the design is permanently mounted on the article to be decorated by means of the adhesive which still adheres thereto. If the adhesive has a low degree of solubility too much time is required to loosen the design from the backing (about twenty seconds is commonly regarded as the limit) and if the adhesive has a high degree of solubility there is a tendency for substantially all the adhesive to wash off the transfer, leaving too little to mount the transfer satisfactorily. For various reasons the wash-off tendency is particularly pronounced in the case of transfers of the aforesaid lacquer type.

For the foregoing reasons it has been necessary, particularly in making transfers of the type including a lacquer coating, to adjust the characteristics of the adhesive, particularly its solubility, very carefully, or to select the adhesive from a limited number having the desired characteristics, in order to obtain quick separation and, at the same time, satisfactory mounting. It has also been necessary to exercise considerable care in the transfer process to guard against washing off too much adhesive from the design.

Objects of the present invention are to provide decalcomania transfers in which the designs can be quickly loosened from their backings without danger of leaving too little adhesive on the designs, to enlarge the range of adhesives suitable for the purpose, to avoid the necessity of exactitude in the degree of solubility of the adhesive, to avoid the exercise of undue care in gauging the time the transfer is left in the water for softening the adhesive, to afford good adhesion between the transfer and a great variety of surfaces, and generally to improve the art of decalcomania transfers.

According to this invention the design is joined to the backing by two strata of adhesive of different solubility respectively, the stratum nearer the backing having a high degree of solubility to afford quick separation and the stratum nearer the design having a sufficiently low degree of solubility to remain substantially intact with the design after the first stratum has been dissolved, thereby affording ample adhesive for mounting the design. The latter stratum should also have a wide range of adhesive, that is, it should adhere well to a wide variety of surfaces; and, in the case of transfers having the aforesaid lacquer coating, it should of course adhere well to lacquer. To meet these requirements the preferred adhesives are dextrin having a high degree of solubility and a good water-moistenable gumming such as a high-grade gelatin or a water-soluble resin. The two strata are preferably applied as successive layers, the first coating being dried before the second coating is applied. Before the first layer is applied the backing is preferably coated with a starch sizing; and after the second layer has dried a lacquer coating is preferably applied.

For the purpose of illustration a typical embodiment of the invention is shown in the accompanying drawing in which

Fig. 1 is a face view of a circular decalcomania transfer;

Fig. 2 is a section on line 2—2 of Fig. 1;

Fig. 3 is a sectional view illustrating the separation of the design from the backing; and

Fig. 4 is a sectional view showing the design mounted on its permanent support.

The particular embodiment of the invention chosen for the purpose of illustration comprises a backing B which is ordinarily formed of paper, a first coating S of starch sizing or other suitable sizing material, a second coating A′ of dextrin or other quickly soluble adhesive, a third coating A of gelatin or other moderately soluble adhesive, a fourth coating L of lacquer or the like, and a fifth coating in the form of the design printed on the lacquer coating. To remove the design from the backing the transfer is immersed in water as illustrated in Fig. 3 until the coating A′ softens sufficiently to permit the design to be slipped off the backing as indicated by the arrow in Fig. 3. Owing to the difference of solubility of the two layers A and A′ the layer A remains substantially intact after the layer A′ has largely dissolved away, and as shown in Fig. 4 the design

is permanently mounted by means of the adhesive layer A.

The layer A preferably comprises a high-grade gelatin having a viscosity of 150 to 300 millipoises at 15° F. in a 12½% concentration with water. The gelatin is preferably plasticized with d-gluconic acid or other suitable plasticizer. The preferred formula for the layer A is as follows, all parts being by weight:

	Parts
Gelatine	25
Water	100
D-gluconic acid (50% aqueous solution)	15
Glycerin	1

Gelatin is preferred because it affords a clear transparent and highly flexible film. The d-gluconic acid adds to the flexibility of the film and also improves the adhesion to the lacquer film. The amount of d-gluconic acid may be varied between 0 and 28 parts. Other suitable plasticizers are lactic acid, and asorbitol.

It should be understood that the present disclosure is for the purpose of illustration only and that this invention includes all modifications and equivalents which fall within the scope of the appended claims.

I claim:

1. Decalcomania material of the type comprising a backing, a separable design and intermediate adhesive temporarily holding the design on the backing, characterized in that the adhesive comprises two strata, a dextrin coating having a high degree of solubility to afford quick separation of the design and a gelatin coating having a relatively low degree of solubility and being located between the dextrin stratum and the design so as to remain substantially intact with the design when the dextrin stratum is dissolved, thereby assuring both quick separation and also ample adhesive for mounting the design.

2. Decalcomania material of the type comprising a backing, a layer of starch sizing on the backing, a separable design and intermediate adhesive temporarily holding the design on said layer, characterized in that the adhesive comprises two strata, a dextrin coating having a high degree of solubility to afford quick separation of the design and a gelatin coating having a relatively low degree of solubility and being located between the dextrin stratum and the design so as to remain substantially intact with the design when the dextrin stratum is dissolved, thereby assuring both quick separation and also ample adhesive for mounting the design.

3. Decalcomania material of the type comprising a backing, a separable design and intermediate adhesive temporarily holding the design on the backing, characterized in that the adhesive comprises two strata, a dextrin coating having a high degree of solubility to afford quick separation of the design and a gelatin coating having a relatively low degree of solubility and being located between the dextrin stratum and the design so as to remain substantially intact with the design when the dextrin stratum is dissolved, said gelatin coating being plasticized with d-gluconic acid.

4. Decalcomania material of the type comprising a backing, a separable design and intermediate adhesive temporarily holding the design on the backing, the intermediate adhesive comprising a dextrin stratum having a high degree of solubility to afford quick separation of the design and, between said stratum and design, a gelatin stratum which has a lower degree of solubility and which is plasticized with d-gluconic acid.

BENJAMIN ASNES.