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PRINTING PROCESS

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This invention relates to a printing process and in particular to an image transfer method which may be utilized by artists, draftsmen and the like for layout work or for decorating articles of manufacture.

This invention is primarily concerned with a new method for transferring and imprinting line art or halftones which have been provided as imprints on a sheet of paper to another surface such as another sheet of paper or an article of manufacture. This is accomplished easily and rapidly by means of an image transfer material which removes only part of the ink of the original image and does not distort or destroy said original image. The image transfer material is then applied to a surface which would not ordinarily retain the image but which has been treated to effect the transfer by adhesion of part of ink retained thereby in the form of the original image or a distorted version of said original image. The image transfer material is flexible and may be distorted to conform to irregular or curved surfaces. As a result, the print may be transferred to a flat or irregular surface and the process may also be used for the decoration of articles of manufacture or for the layout of outlines which will facilitate further decoration.

Accordingly it is a primary object of this invention to provide an improved image transfer process which is low in cost and simple in application.

Another object is to provide a new printing process which may be used to transfer an image derived by printing or writing onto a first surface and effecting a transfer of only part of the imprinting material without completely erasing or destroying the image from said first surface.

Another object is to provide an improved printing process which may be easily used to decorate the surfaces of articles without the need for paint, decals, or the like.

Still another object is to provide a simple process which may be used by artists, draftsmen and others for applying layout lines to a surface which may serve as an aid in drawing or decorating and which may be retained as a permanent part of the surface or easily erased therefrom.

Yet another object is to provide an image transfer process employing a layer or film of an erasable material such as rubber cement as an image receiving and retaining medium which may be easily removed in its entirety or partly for corrective purposes without damaging or soiling the surface to which it is applied.

Another object is to provide a process for easily decorating irregular as well as flat surfaces without the need for special cuts or preformed printing surfaces.

Another object is to provide a means for transferring an image from a flat to a curved or irregular surface by use of the same image transfer device, which contacts and conforms to said surfaces.

Still another object is to provide an improved image transfer process which does not employ a wet or smearable ink, hence permitting the member receiving the print to be used or operated upon immediately.

Another object is to provide an improved printing process in which an image is transferred from one surface to another whereby said image may be distorted from its original shape.

With the above and such other objects in view as may hereinafter more fully appear, the invention consists of the novel procedures and preparations as will hereinafter

be more fully described, but it is to be understood that changes, variations and modifications may be resorted to which fall within the scope of the invention as claimed.

Turning now to the details of this invention, I have discovered a unique method of transferring an image from a printed surface such as the ink imprint applied to a printed sheet of newspaper, to the surface of a second member which may be another sheet of paper, paper board, wood, metal, plastic, ceramic, cloth or the like for decorative or illustrative purposes without the use of photography or other presently known printing or image transfer processes. I effect such a transfer by employing an intermediate carrying material having the characteristic that it will temporarily pick up and retain part of the ink or other material used to form or print the original image yet will permit the release of at least part of said material picked up thereby, to a further surface onto which the image is to be transferred and retained. In my experiments I have discovered that there are a number of image bearing materials which may be used to form images and may be so transferred, a number of transfer materials which may be used as carriers for the image, and a number of materials which may be applied to the surface receiving the image for transferring it from said image transfer material.

Suitable materials for forming the original image include the various inks used in newsprint and the general printing of newspapers, pencil carbon, imprints formed by means of typewriter ribbons, imprints formed through typewriter carbon paper, various rubber stamp inks, and other specialty inks which will not completely dry out during the transfer period or which are partially removable from the printed surface by means of the transfer medium to be described. A suitable transfer medium or material may comprise, for example, a quantity of silicone putty such as manufactured by the General Electric Company, a knot or glob of which may be applied to the surface of the original imprint and, when removed therefrom, will retain part of the ink of the original image in the form of a similar image. The commercially available material Silly Putty may be utilized for this purpose although I have discovered a more preferable material is a silicone putty presently available in experimental quantities from the General Electric Company and having a lesser tendency to flow than the conventional Silly Putty material which will more easily distort during removal from the original image surface. I have been able to reproduce transferred images which are substantially free of distortion using said new silicone putty. Other plastic materials having the ability to transfer an image from a page of printed matter such as a newspaper or newsprint are also available and may be used for the image transfer medium. Another such material is the flexible plastic material having the trademark "IT" and manufactured by the James Industries, Inc., of Paoli, Pennsylvania.

The image so transferred to the transfer medium is not ordinarily removable therefrom by application of the surface of the transfer medium containing the image to an ordinary surface such as the surface of a sheet of paper. To effect such a transfer the member or sheet of material to which the image is desired to be transferred must be treated with a material which will easily effect said transfer without retaining any of the material of the transfer medium. A suitable surface treatment may be effected by applying a coating of an adhesive such as rubber cement or the like to the surface to receive the image. While it is preferable that the adhesive dry prior to the transfer of the image such transfer may also be effected while said coating is in a tacky or semi-dried condition. If rubber cement is used as the surface treat-

ment material, it is preferably permitted to dry so that parts of the coating will not be torn away by the transfer material when removed therefrom. Various other pressure sensitive materials such as those adhesives used in preparing various pressure sensitive tapes may also be employed for the image transfer and retention on the second surface although these have certain obvious disadvantages over a non-tacky material such as rubber cement or the like which has been allowed to dry.

There are numerous adhesive materials for receiving the image from the transfer medium which will dry and harden a period of time after being applied to a surface and which will transfer and retain the image from the transfer medium while in a tacky condition which may be suitably utilized for this purpose. One of these is a commercially available adhesive known as Quick-Stick manufactured by Maker Products, Inc., Croton-on-Hudson, New York, which will retain its tackiness for some time after application to a surface but which will dry out thereafter.

Since various adhesives such as rubber cement may be easily abraded or otherwise removed from surfaces to which they are applied if exposed to handling, the image may be more permanently secured to said surface by the application of a transparent lacquer or suitable plastic coating over said image and the coating which retains it.

A further novel feature of the process heretofore described for the transfer of images to surfaces of various materials is that the image picked up and retained by the transfer medium or putty may be purposely distorted from its original shape to a shape desired by the person handling the material and transferred to the new surface as an image of a new and predetermined shape for decorative or illustrative purposes. I have also discovered that when an adhesive such as rubber cement is used as the transfer coating and is applied to an irregular or finely roughened surface such as the surface of a piece of cloth, then a more permanent image and coating will be effected which will not easily rub off. Accordingly, this process may be suitably applicable for the unique or personal decoration of clothing, handkerchiefs and the like.

A further embodiment in the realm of this invention comprises the steps of applying a deformable image transfer material such as the silicone putty heretofore described, to an irregular surface having a design embossed therein or otherwise provided with a series of irregularities or ridges projecting from said surface which form similar indentations in the surface of the transfer material. If a printing ink or the like is then applied to the surface of the image transfer material without changing its shape, said ink may be suitably applied to another surface by light contact of the image transfer material to said other surface and the surface design resulting from the indentation therein will appear as an area free of ink. While various printing inks may be spread with a brush or otherwise applied to the image transfer material after the formation of the indented pattern therein, a

suitable method of applying a printing ink thereto is by direct contact with a quantity of said ink spread on a surface. I have also discovered that the conventional so-called ink-pad used for inking rubber stamps may be employed to transfer its imprinting ink to the image transfer material by light contact therewith. The images so developed will resemble somewhat wood block or linoleum cut prints. However, they may be distorted from the original shape of the embossed surface by working the silicone putty in the hands after application to said surface.

It is noted that the image transfer material may be held and manipulated by hand in effecting the herein described operations or may be held by means of a retainer. For example, a plate or block having a cavity or indentation therein or having one surface circumscribed by a shallow frame may be employed to hold the image transfer material. The quantity of image transfer material secured or held by the cavity walls or frame is preferably such that it ordinarily projects a short distance beyond the surface or edges of the frame and hence will not be substantially disorted laterally when compressed against the image bearing or receiving surfaces.

I claim:

A printing process for transferring a first image constituted of an incompletely dried newsprint ink from a surface on which it is formed to a paper receiving sheet which sheet, when untreated, will not receive said ink and form said image thereon, which comprises:

(*a*) applying an image transfer element constituted of a flexible mass of a silicone putty to said surface and pressing the silicone putty against the same to remove a stratum of the ink image from said surface and produce a corresponding ink coating constituting a reversal image of said first image on the silicone putty;

(*b*) treating said paper receiving sheet with a material having a greater adhesion for the ink coating on said silicone putty than the silicone putty has itself;

(*c*) applying the ink-image bearing silicone putty surface to the thus treated paper receiving sheet and pressing the silicone putty against said paper to transfer at least a stratum of the ink coating from the silicone putty to the paper; and

(*d*) removing said silicone putty image transfer element from said paper receiving sheet, the stratum of the imagewise ink coating transferred to the paper remaining thereon.

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