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(71) Applicant: Letraset Limited
St. George's House 195-203, Waterloo Road
London SE1 8XJ(GB)

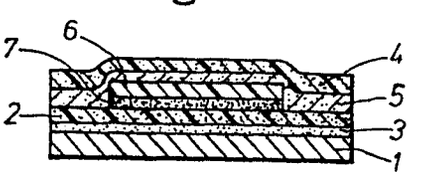
(72) Inventor: Jung, Nicholas Robert
59, Bournewood
Hamstreet, Nr. Ashford Kent TN26 2H2(GB)

(74) Representative: Marshall, Monica Anne et al,
GALLAFENT & CO. 8 Staple Inn
London WC1V 7QH(GB)

(54) Labelling tapes.

(57) A labelling tape consists of a plastics film (2) and adhesive (3) to stick it to the object it is desired to label, which adhesive (3) is protected by a release paper strip (1). In the labelling tape a narrower pigmented tape comprising a plastics film backing (6) and a shearable dyed or pigmented coating (7) is held against the surface of tape (2). The pigmented tape is held against the tape (2) e.g. by an overall applied wider adhesive tape (4, 5). In use pigmented or dyed areas corresponding to the desired label legend are transferred from coating (7) to the surface of tape (2) under pressure. Thereafter the remainder of the pigmented tape is peeled off and discarded to leave the transferred pigmented or dyed legend on plastics film (2) and, preferably beforehand, the release paper strip (1) is removed and plastics film (2) is adhered to the object to be labelled. A modified tape embossing machine may be used to make the labels.

Fig.1.



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Labelling tapes

This invention relates to labelling tapes.

In recent years labelling tapes have been developed, most particularly in the form of embossing tapes, which have found very wide application both in home and office use. One particularly successful type has been widely sold under the registered Trade Mark Dymo. Such labelling tapes are used in a simple hand-held machine in which the tape is fed between two embossing dies which are pressed together to emboss the desired letter shape on the tape. This is done successively for each letter of the legend desired and the piece of tape bearing the legend is then cut off. The tape consists of two layers, held together by a tacky pressure sensitive adhesive, and after the piece of tape bearing the desired legend has been cut off, one layer is peeled off to reveal the adhesive which is then used to stick the other layer which constitutes the label on to the desired surface.

Although such tapes have received very widespread commercial acceptance, they are not without disadvantages. Thus in order to provide an adequate thickness of material to enable embossing to take place, the tape itself needs to be fairly thick and the embossing makes it effectively thicker. The labels accordingly tend to project undesirably from the surface on which they are adhered and tend to

catch, e.g. on the edges of paper or on the fibres of cloth passed over the surface to which they are attached. In addition, the embossed letters appear as white on a relatively dark ground i.e. with the contrast reversed compared to a normal printed label. This does not facilitate rapid perception of the legend.

British Patent Specification 728545 describes other tapes which may be used for labelling. The tapes of British Patent Specification 728545 comprise a transparent flexible layer having a pressure sensitive marking layer thereon, which marking layer obscures any layer therebeneath, and, generally, a base therebelow, which may be provided with adhesive for attachment to a desired substrate. When pressure is applied to such a tape, e.g. by writing strokes or by means of a typewriter, the pressure sensitive marking layer material changes or disintegrates to expose the contrasting colour of an underlying layer through the marking layer along the lines of the pressure strokes. For labelling the complete structure is then adhered to the substrate to be labelled. The label obtained therefore is very liable to damage or alteration for example by application of accidental pressure causing unintentional changes or disintegration in the pressure sensitive marking layer material.

According to the first feature of the present invention there is provided a labelling tape consisting of an image donating tape held against an image receiving tape, the image donating tape consisting of a plastics film backing having on its side adjacent the image receiving tape a shearable dyed or pigmented coating which, on the imagewise application of pressure to the rear surface of the image donating tape, adheres more strongly to the image receiving tape than to the backing of the

image donating tape, and wherein the image receiving tape consists of an image receiving flexible plastics film releasably adhered by means of a layer of permanently tacky pressure sensitive adhesive to a release film, and wherein the image donating tape is narrower than the image receiving tape and is held each side against the image receiving tape.

In use of the labelling tape according to the present invention, the desired label legend is built up successively by appropriate application of pressure corresponding to the desired, e.g. letter or number, shape to the rear surface of the image donating tape. This causes the shearable pigmented or dyed coating material to be transferred in the areas where pressure is applied from the plastics film backing of the image donating tape to the flexible plastics film of the image receiving tape. When the desired label legend has been built up, the appropriate length of tape is normally cut off. The release film is removed to enable the label to be adhered to a substrate as desired and the remainder of the image donating tape is removed and discarded to leave adhering to the substrate the flexible plastics film of the image receiving tape with the transferred legend in sheared pigmented or dyed coating material thereon.

Thus the tapes according to the present invention may be used in a fashion analogous to known embossing tapes to provide labels. However since the image receiving tape can be made very thin, and the image donating tape can be made to apply to it, under the action of pressure, a thin but highly opaque layer, the finished label is thin and accordingly not liable to be easily removed by catching mechanically e.g. on cloth or a paper edge.

Moreover, since the remainder of the image donating tape is removed and discarded and does not form part of the final label, the chances of damage or alteration when accidental pressure is applied are reduced.

The image donating tape of the labelling tape according to the invention may vary in its detailed composition very widely, but is preferably of a nature analogous to so-called carbon film ribbons which are used in modern electric typewriters. They consist generally of a very thin plastics film backing having a black pigmented coating on one side, which coating, while firmly adherent to the film backing during handling, can nonetheless be transferred to a desired substrate under the action of pressure.

The image receiving tape consists, as noted above, of a tape of plastics film releasably adhered to a tape of e.g. release paper or release coated film. The film may be transparent or translucent, or it may be e.g. opaque white or black. The preferred image receiving film is transparent cellulose acetate, preferably one having a matt or semi-matt surface in order that the surroundings of the final label do not show up particularly when the label is applied to the final substrate. The pressure sensitive adhesive attaching it to the release paper or release coated film is preferably an acrylic type, though numerous other permanently tacky pressure sensitive adhesive types may be used. The preferred material for the backing of the image receiving tape is siliconised release paper.

The image donating tape may be held against the wider image receiving tape by application thereover of a further adhesive tape layer which adheres at the edges where it overlaps the image donating tape to the image receiving tape. The adhesive should

naturally be chosen to peel from the image receiving tape leaving no residue thereon and is preferably chosen to have a peel bond value to that surface less than the peel bond value of the permanently tacky pressure sensitive adhesive forming part of the image receiving tape to most substrates on to which labels might be applied such as glass, metal, paper, card, plastics and wood. Alternatively, the image donating tape may consist of a unitary tape backing having a stripe of dyed or pigmented shearable coating down its centre and its edges being coated with two stripes of pressure sensitive adhesive. Such materials are generally more difficult to manufacture and accordingly this alternative is less preferred.

The labelling tape according to the invention may be imaged in a standard tape embossing machine in which the female dies have been filled so that they present a flat anvil surface for application of pressure in each case. The tape advance and tape cutting mechanisms for advancing the tape as successive letters are imaged on to it, and for severing the imaged portion of tape, are well known from the commercial sales of machinery and from the Patent literature and are not therefore described further here. However it is preferable to sever the tape with an arcuate tape rather than a straight cut, since doing so facilitates separation of the used up image donating tape, which is then discarded, from the imaged image receiving tape, separation being easily effected at the convex end of the label which has been cut off.

Thus in using a tape according to the present invention it is inserted into the magazine or cartridge of a tape labelling apparatus of known type, modified as just noted, the desired legend is

then applied by selecting successive letters, moving them into the desired position on the tape and applying them against the tape under pressure, the label strip bearing the desired legend is then cut off, the release paper or tape removed to expose the layer of pressure sensitive adhesive and that layer then adhered to the desired receptor. The used image donating tape may be peeled away at this stage if it has not been peeled away previously. Preferably the image donating tape is left on until after the image receiving tape is stuck down since this avoids the risk that the newly transferred imaging material may be smudged by over-zealous rubbing down of the tape with a finger e.g. to make it stick. Naturally rubbing down in such circumstances should not be effected using pressures sufficient to cause any undesired or pigmented layer to transfer from the image donating tape to the image receiving tape.

The accompanying drawings show by way of example one form of labelling tape according to the invention. In the drawings: Figure 1 is a cross-section through the tape with the layer thicknesses substantially exaggerated for clarity, and

Figure 2 is a plan view of the tape cut away staggered.

Referring to the drawings, the labelling tape according to the invention consists of a siliconised bleached kraft tape 1 to which is adhered a tape 2 of cellulose acetate film 30 μm thick by means of a layer of acrylic pressure sensitive adhesive 3.

Held against tape 2 by means of a similar tape consisting of 30 μm thick cellulose acetate film 4 and acrylic adhesive 5 is a narrower tape consisting of a polyethylene film backing 6 having a black pigmented coating 7 on one side thereof. The adhesion of adhesive 5 to acetate film 2 is generally less

than the adhesion of adhesive 3 to substrates to which the label is desired to apply such as paper, glass or metal. Coating 7 is so formulated that under the action of pressure applied from the top as seen in Figure 1 the area of coating 7 where pressure was applied adheres more strongly to acetate film 2 than to polyethylene film 6. Thus if after the application of such localised pressure, e.g. in the form of alphabetic letter images, tape 4 is peeled away from tape 2, it takes with it the layer of adhesive 5, polyethylene film 6 and the remainder of pigmented coating 7 to leave areas of coating 7 constituting the desired images on top of the acetate film 2. This can be done before or after adhering the label to the desired surface by peeling away release paper 1 and sticking the label down using adhesive 3.

The following example will serve to illustrate the invention:

EXAMPLE

30 μm thick cellulose acetate film was coated using a Meyer bar with a coating composition of:

Acrylic polymer adhesive (National 0301026 at 40% N.V.C.)	75 parts by weight
Solvent (ethyl acetate)	80 " " "

and the coating dried by hot air to give a dry coat weight of 6 g.s.m.

A 15 μm thick polyethylene film was coated with a coating composition consisting of (% by weight):

Ethyl cellulose	11.5% parts by weight
Ester wax	20.4% " " "
Silicone resin	21.01% " " "
Carbon black	44.7% " " "
Blue dye	2.4% " " "

and the coating dried by hot air to give a dry coat weight of 3.8 g.s.m.

Strips of the coated acetate film were 10 mm wide and of the coated polyethylene film 8 mm wide. These were assembled on to strips of siliconised bleached kraft paper (type 30/111 ex Jointine) 10 mm wide as shown in the accompanying drawings to give a labelling tape which can be used as described above.

CLAIMS

1. A labelling tape characterised by consisting of an image donating tape held against an image receiving tape, the image donating tape consisting of a plastics film backing (6) having on its side adjacent the image receiving tape a shearable dyed or pigmented coating (7) which, on the imagewise application of pressure to the rear surface of the image donating tape, adheres more strongly to the image receiving tape than to the backing of the image donating tape, and wherein the image receiving tape consists of an image receiving flexible plastics film (2) releasably adhered by means of a layer (3) of permanently tacky pressure sensitive adhesive to a release film (1), and wherein the image donating tape is narrower than the image receiving tape and is held each side against the image receiving tape.

2. A labelling tape according to claim 1 characterised in that the image donating tape consists of a thin plastics film backing (6) having a black pigmented coating (7) on one side.

3. A labelling tape according to claim 1 or 2 characterised in that the image receiving film (2) is of transparent cellulose acetate.

4. A labelling tape according to any one of claims 1 to 3 characterised in that the pressure sensitive adhesive layer (3) is of acrylic type adhesive.

5. A labelling tape according to any one of claims 1 to 4 characterised in that the release film (1) of the image receiving tape is siliconised release paper.

6. A labelling tape according to any one of claims

1 to 5 characterised in that the image donating tape is held against the wider image receiving tape by application thereover of a further adhesive tape layer (4 and 5) which sticks at the edges where it overlaps the image donating tape to the image receiving tape.

7. A labelling tape according to any one of claims 1 to 5 characterised in that the image donating tape consists of a unitary tape backing having a stripe of dyed or pigmented shearable coating down its centre and its edges being coated with two stripes of pressure sensitive adhesive.

Fig.1.

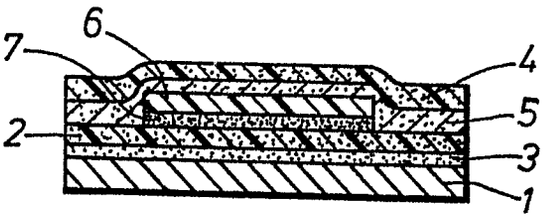

Fig.2.