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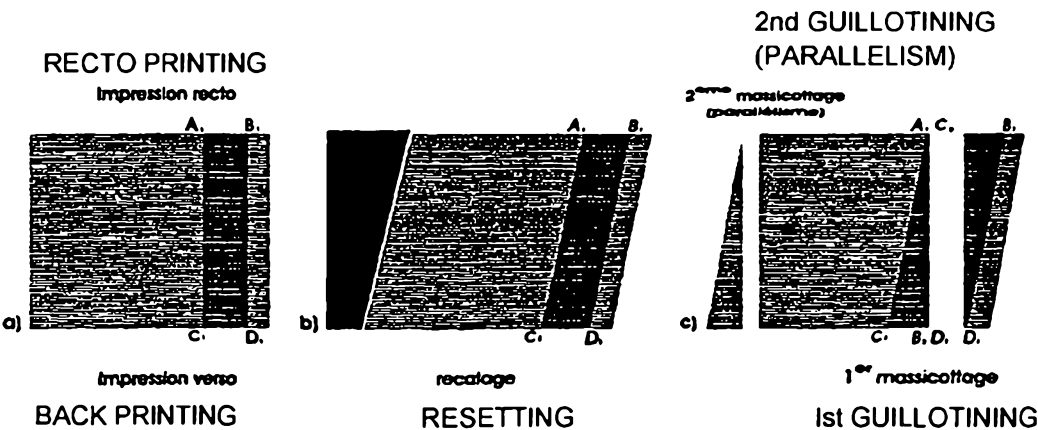
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(54) Title: METHOD FOR PRODUCING IMAGES IN THE EDGE OF A VOLUME OF PAPER SHEETS

(54) Titre : PROCEDE DE FABRICATION D'IMAGES DANS LA TRANCHE D'UN VOLUME DE FEUILLES DE PAPIERS



(57) Abstract: The invention concerns a method for producing an image in the edge of a volume of paper sheets. The invention can be used for numerous stationery products, note pads, exercise books and the like. In the present invention the images are printed not on the edges but on the paper surface. The method comprises several processes: printing, resetting, guillotining. The invention also concerns the insertion of a segmented image systematically in edges and added in the make-up of a volume, for use in a complex technological process.

(57) Abrégé : La présente invention concerne le procédé de fabrication d'une image dans la tranche d'un volume de feuilles de papier. L'invention peut s'appliquer à une série de produits de papeterie, blocs-note, cahiers, livres etc.. Dans la présente invention, les images sont imprimées non sur la tranche mais sur la surface de papier. Le procédé comporte une série d'interventions: impression - recalage - massicotage. La présente invention concerne aussi l'introduction d'une image sectionnée systématiquement dans des tranches et additionnée dans la mise en page d'un volume, pour l'application dans un processus technologique complexe.

WO 01/60630 A1

METHOD FOR PRODUCING IMAGES IN THE EDGE OF A VOLUME OF PAPER

The present invention relates to a process for making images on the side of a volume of paper sheets.

The characteristic lies in the capacity of recombining images in the section of a block of paper and combinative potential (texts or images) in anamorphisms, deformations and forms.

The invention can be applied to a series of paper products: note books, note pads, books etc... or to facilitate innovation of new objects and games. The contribution can also be decorative, advertising, promotional or indicative. In the past, there were impressions of texts or images on the side of books or the section of blocks of paper. In the present invention, the images are printed not on the side but on the surface of paper so as to keep coherence of the image and sufficient quantity of the image elements. The process, in one preferred form, comprises a series of steps:

- 1) Impression of the volume of paper recto sheets or verso (black and white, monochromy or quadrichromy), with the selected side (P1.1 fig.2a).
- 2) Skewing the volume of paper to an angle different than 90° , with the help of a device so that the two ends of the image are found on a common perpendicular line to the plane of the paper (P1.1 fig. 2b).
- 3) Trimming the block of paper through the printed image (P1.1 fig.2c).

One result, the recombining of the images in the height of the volume of paper sheets which appear in the section, at least, in a theoretical way, the image will not be really and clearly visible until a shift of the sheets the ones compared to the others, or by the distorsion of the volume of the paper sheets (P1. 1 fig.3a). In the case of the verso impression, one or the other image appears according to the direction of the distorsion in an alternative way (P1.1 fig.3b).

In the present invention, it is significant sometimes to carry out the compression of the images to be printed (P1.1 fig.1) in order to not block the finality of the object: books, magazines, diaries, note books, note pads, play cards, etc... In the end, the image refinds its original dimension on the side of the paper block

The images can undergo various deformations for different graphic purposes. The combination image-texts, initials or symbols can be carried out in a promotional goal, advertising, decorative, a pun or images such as for example, the recto impression of a winter landscape and on the verso the same landscape in summer. The introduction of a third image by impression on the section is possible. The process of alignment before the trimming can be done in various geometrical or figurative forms (Pl.2 fig. 4). The shift of the sheets can be carried out without form by other procedures and one can consider distortions in the mass of paper or a repositioning of the sheets, one compared to another (example by rotation.) The purpose of the device in special forms is a specific deformation of the image and the will to mix it with a relief which lets the image be seen in a certain manner. After trimming, for a possible binding, it is necessary to readjust the sheets in right angle (Pl.2 fig. 7). In certain cases, a retrimming is necessary to recreate the parallelism of the volume of paper sheets (Pl.1 fig.2c). In another case, one can connect without retrimming, while readjusting to 90° (Pl.2 fig.6). This type of binding leaves visible the recto image, without torsion (Pl.2 fig.6). Several combinations can leave visible entirely or partially the images in home position. One can foresee, in cases of productivity, the design of a press which modifies the position of the impression, breaks into leaf by sheet to thus carry out the skewing phase before trimming.

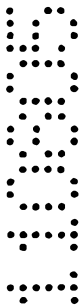
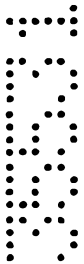
Trimming according to the design or for particular concepts, can be carried out with a blade right, curved, angular, etc... (Pl.2 fig.8) or with all other form of cutting (Pl.3 fig.9). The trimming can also be composed of several interventions or the combined interventions (Pl.3 fig.10). The impression of the paper sheets, in this case, can comprise one or more images adapted to the interventions of cutting. In certain cases, the impressions and the trimming can be carried out on one, two or several sides and the operations impression-trimming followed by a second impression and of a retrimming on different places.

The objects can also be composed of several thicknesses of paper (Pl.3 fig.12). The paper sheets can be free, glued or connected in all manners (before or after the trimming). The printed and trimmed blocks of paper can also be locked up in transparent boxes of different shapes, letting the images appear. The rigid or flexible boxes can leave by their design, paper to

reposition itself in several ways (Pl.3 fig.11). The imprint can be recto simple or to have the same image printed on the back, mirroring with the same co-ordinates. For aesthetic or practical reasons, the thickness of the blocks can be different and paper can have different weights. The sheets can be of different nature (ex: opaque plastic or transparency). Two objects can be carried out in the same block of paper and to profit from the same mirroring images (Pl.4 fig.14). In the manufacturing process, one can obtain several objects from the same block of paper. Only one aligning device with a different than 90° angle, transmits the shift to the assembly. Then, the objects are separated by normal trimming at 90° (Pl.4 fig.16). The printing of images on the trimming side, can be a remake on an already printed and stitched volume of paper, to improve its quality. For the extension of this invention on technological processes where the printing, stitching and the trimming are done at the same time, one simulates the process of skewing in the preparation with the printing. An image compressed or not, can be introduced into the formatting of a volume, be skewed systematically compared to the reference marks of cutting (Pl.3 fig.13) and thus to envisage and break up the process of the invention for an equivalent result without movement of retiming before trimming (significant for the manufacture of books, magazine, catalogues etc...). The skewing will be made compared to the margin of cutting (principle of the lost bottom) in connection with the folio and the number of pages. One can have the same result to leave the image uncompressed, divided systematically in sections added in the formatting as in the preceding case (Pl.4 fig.17).

In the present invention, one can envisage software which would allow the preparation of the image and the automatic introduction into a folio. The invention can be applied to catalogues of sale, telephone directories, dictionaries, diaries etc..., for information purposes, on the contents and its position in volume. The information can be graphic, image or text etc... In the case of text, the intervention can be complementary to the current method which is that of printing a text-advertiser on each page of a chapter (Pl.4 fig.16). With the risk of worse quality, one can simulate the assembly process by printing or a shifted cutting, sheet by sheet. A solvent can be applied to improve the visibility of the image on the trimmed side. If, on the other hand, the image must be hidden, the side of the trimmed block of paper can be gilded.

In the specification the term “comprising” shall be understood to have a broad meaning similar to the term “including” and will be understood to imply the inclusion of a stated integer or step or group of integers or steps but not the exclusion of any other integer or step or group of integers or steps. This definition also applies to variations on the term “comprising” such as “comprise” and “comprises”.



THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A manufacturing process for the fabrication of a block of sheets of paper carrying images on a side of the block, said manufacturing process characterized by the steps of:
- printing an image on a surface of each sheet of paper;
 - realigning the block of sheets of paper at an angle different than 90°;
 - trimming or cutting the realigned block of sheets so that, in the plane of cutting, the image recomposed from successive strips emerges on the side of the block; and
 - further skewing the block of sheets of paper, either before assembly or by torsion of block after assemblage or binding.
2. A manufacturing process, according to claim 1, further characterized by compression of the image before printing, to dimensions corresponding to the realigning and trimming steps, in order to use a minimum of the surface of the paper sheet and wherein the compression of the image is calculated according to a predetermined design.
3. A manufacturing process according to claim 1 or claim 2, further characterized by recto/verso printing of the block of sheets of paper so as to produce two images in the section of a volume.
4. A manufacturing process according to any one of claims 1 to 3, characterized by the application, after trimming step, of a coat of paint or gilding, in order to hide the images which will only be visible by skewing the block of paper sheets.
5. A manufacturing process according to any one of the preceding claims, characterized by the rotation of the sheets of the block of paper, one compared to another, before or after the trimming, thereby generating deformations and anamorphosis of the image.
6. A manufacturing process according to any one of claims 1 to 3, characterized

by trimming or cutting of the block of paper by means of a blade or a shaped knife.

7. A manufacturing process according to any one of claims 1 to 3, characterized by the realigning of the printed block of paper sheets, before trimming and binding,
5 against an arbitrary form.

8. A manufacturing process according to any one of claims 1 to 3, characterized by the realigning of the printed block of paper sheets, after trimming and binding, against an arbitrary form.

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9. A manufacturing process according to any one of claims 1 to 3, characterized by the substitution of the step of realigning of the block of paper by the preparation with printing, sheet by sheet (folio), with successive trimmings of the image, of sufficient width, shifted one compared to other, with the trimming side, so that the
15 image itself recomposes in the section.

10. A process for the fabrication, from a single block of paper made of a volume of stacked paper sheets, of a plurality of paper products each in the form of a sub-block with an image produced on a side of the sub-block, said method comprising the
20 steps of:

(a) printing a plurality of images on at least one major surface of the paper sheets in the block;

(b) skewing the block of paper sheets in a direction to offset the printed images with respect to one another; and

- 25 (c) trimming the skewed block of paper sheets in a plurality of planes perpendicular to the major surfaces of the paper sheets, at least one of said plane passing through at least one image such that the plane passes through a leading edge of the image at the top of the paper block, and through an opposed trailing edge of the image at the bottom of the paper block, thereby forming a plurality of paper products
30 in the form of sub-blocks cut from the block.

11. The process of claim 10, wherein the images are printed on both top and bottom major surfaces of the sheets of paper in the block, whereby two images are formed along a trimming plane passing through the images.

12. The process of claim 10 or 11, wherein the image is compressed in one dimension prior to printing.
- 5 13. The process of any one of claims 10 to 12, further comprising the step of retrimming those paper product sub-blocks cut from an edge of the skewed block, thereby recreating sub-blocks with parallel surfaces.
14. The process any one of claims 10 to 13, wherein the trimming is performed in
10 several planes simultaneously.
15. The process any one of claims 10 to 13, wherein the trimming is performed in several different steps one after another.
- 15 16. The process any one of claims 10 to 13, wherein at least half of the trimmings do not intersect with images.
17. The process any one of claims 10 to 16, further comprising the step of applying a coating of paint or gilding to the trimmed sub-block of paper sheets in
20 order to hide the images which will only be visible by skewing the block of paper sheets.
18. The process any one of claims 10 to 17, further comprising the step of rotating the paper sheets in the block, one compared to another, before trimming to generate
25 deformations or anamorphisms in the image.
19. The process any one of claims 10 to 17, further comprising the step of rotating the paper sheets in a sub-block, one compared to another, after trimming to generate deformations or anamorphisms in the image.
30
20. The process any one of claims 10 to 19, wherein the trimming is performed with a blade or a shaped knife.
21. The process any one of claims 10 to 20, further comprising the step of

realigning of a printed sub-block of paper sheets after trimming against an arbitrary form.

22. A manufacturing process for the fabrication of a block of sheets of paper
5 carrying images on a side of the block substantially as hereinbefore described and/or
illustrated with reference to any one or more of the accompanying drawings.

DATED THIS TWENTY-EIGHTH DAY OF FEBRUARY 2006

CRISTIAN TODIE

10 BY

PIZZEYS PATENT AND TRADEMARK ATTORNEYS

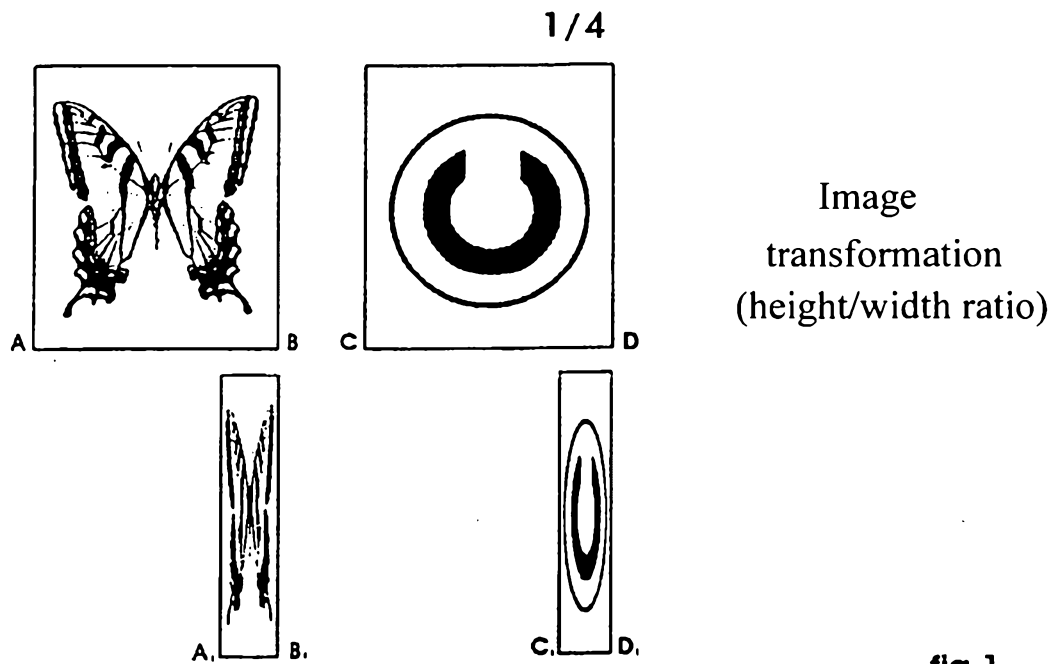


fig.1

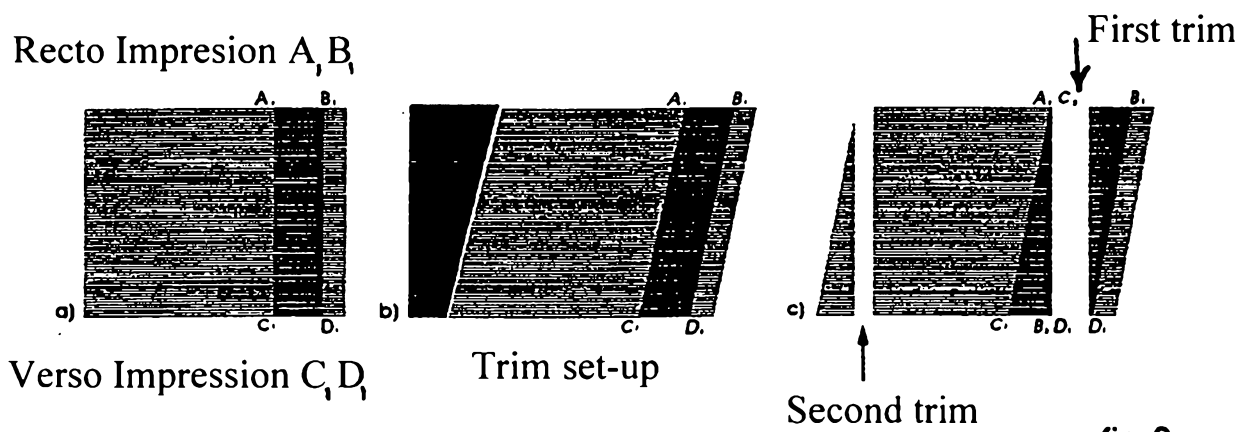


fig.2

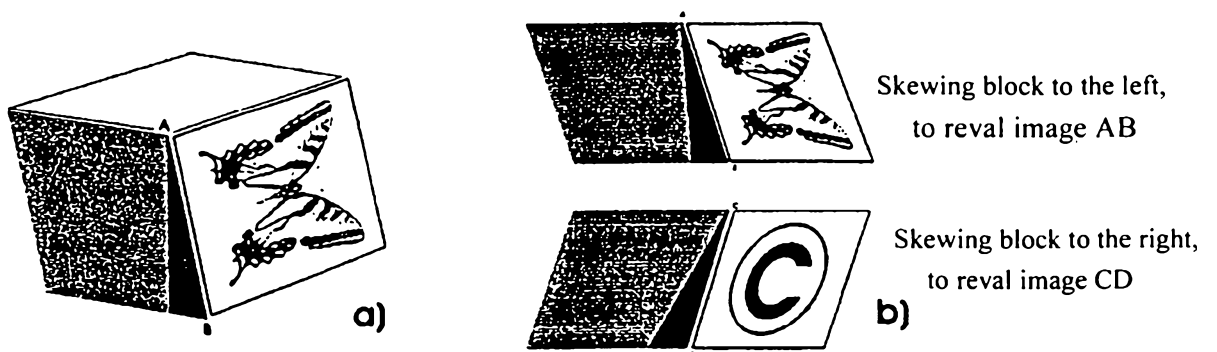


fig.3

2/4

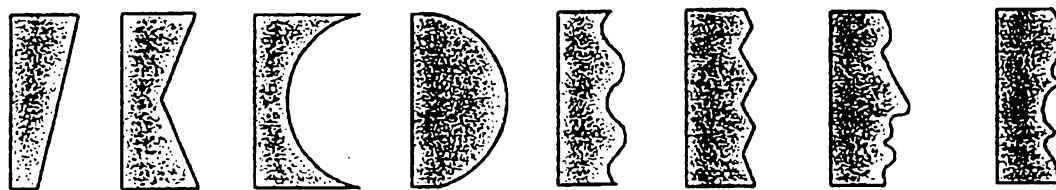
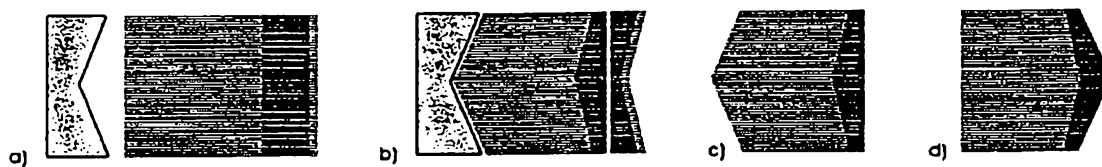


fig. 4



Example of device and procedure leading to final binding fig. 5

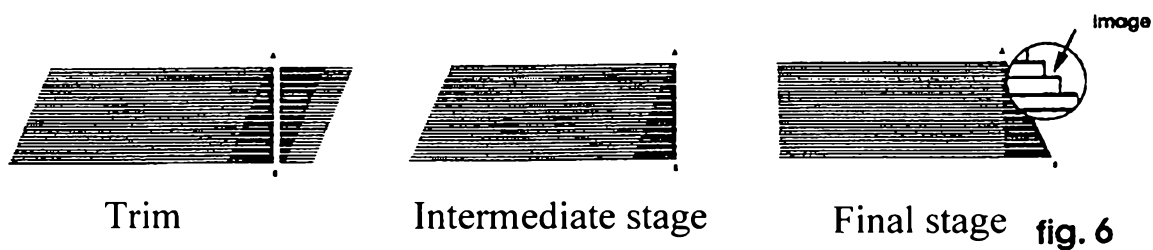


fig. 6



fig. 7

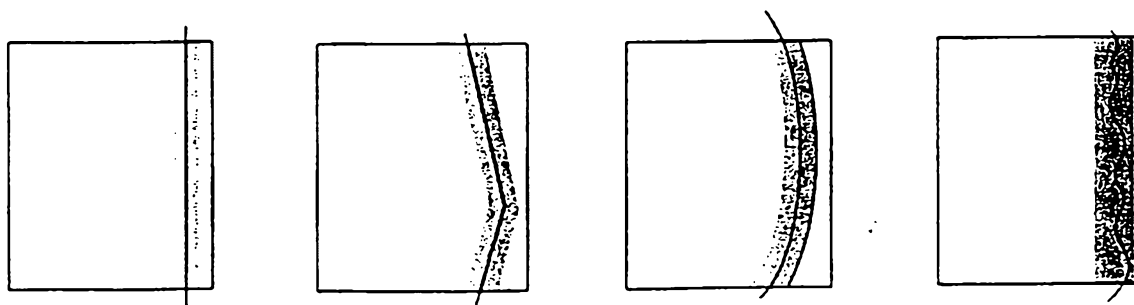


fig. 8



fig. 9

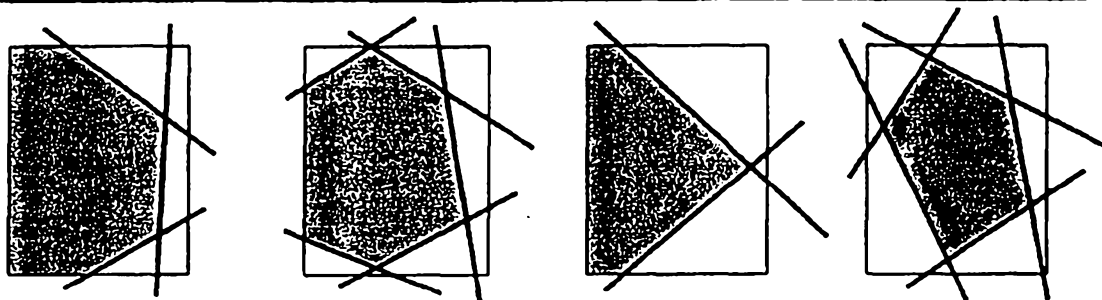


fig. 10

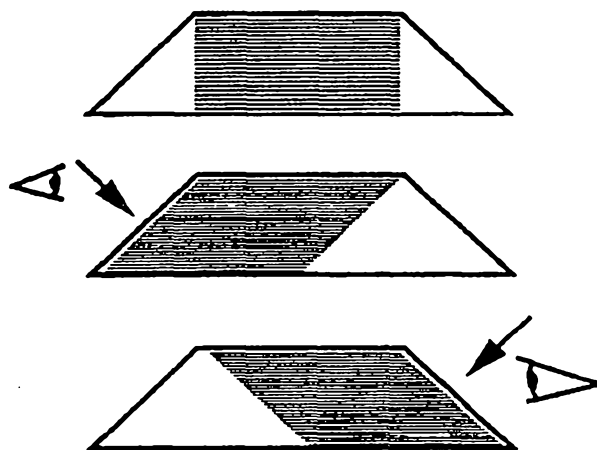


fig. 11

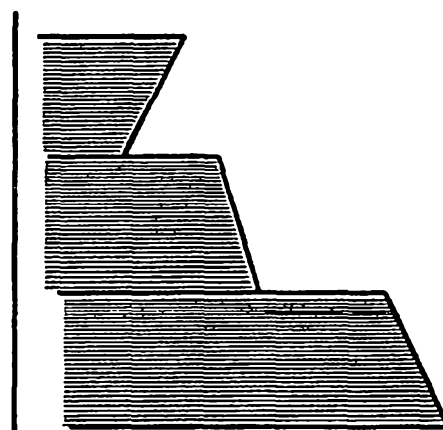
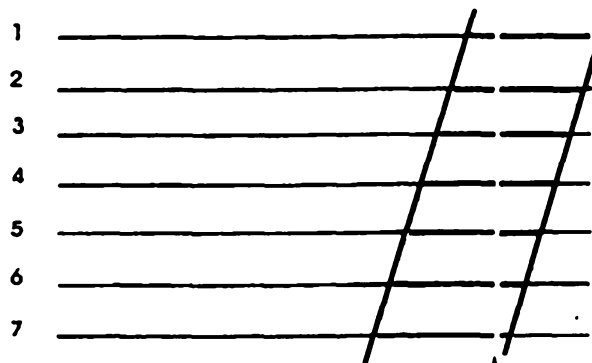


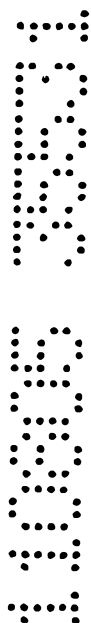
fig. 12

Pages
(follo)



Trim

fig. 13



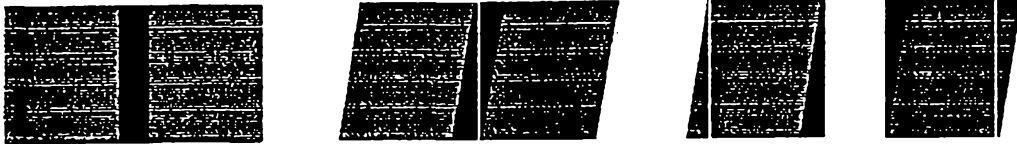


fig. 14

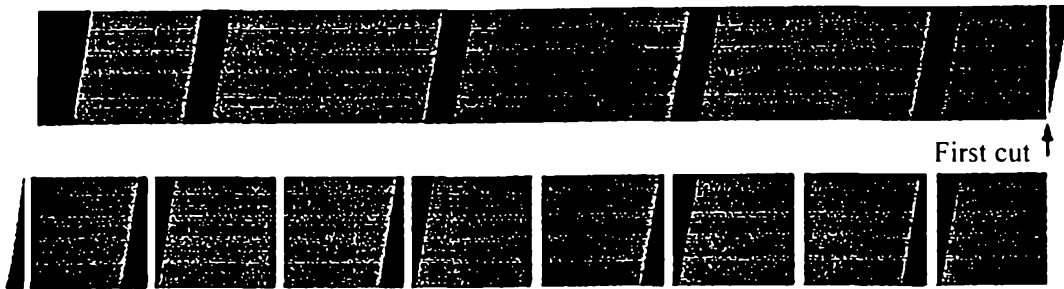


fig. 15

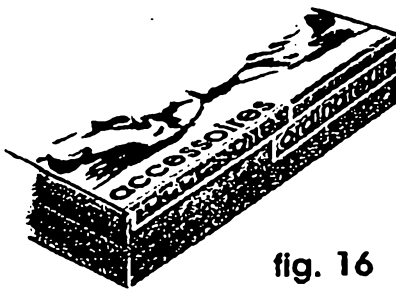
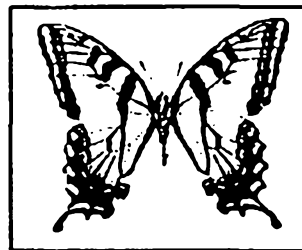


fig. 16



Trim Line →

fig. 17