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STACKED SHEET ARTICLE WITH RELEASE COATED REMOVABLE AREAS

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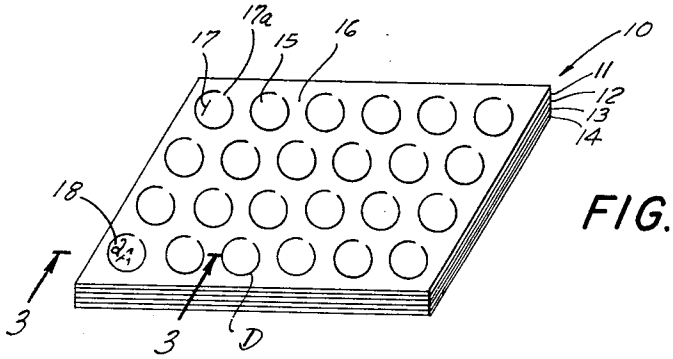


FIG. 1

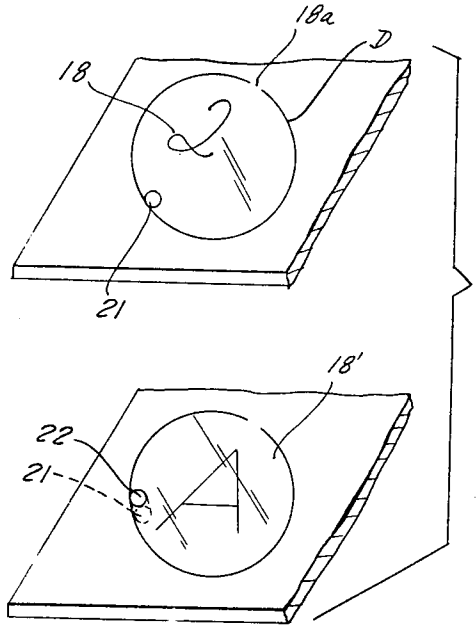


FIG. 2

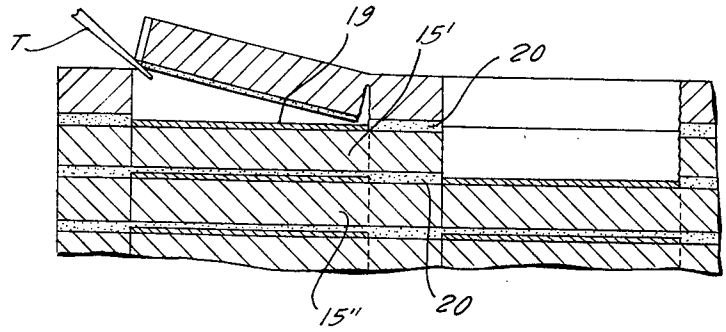


FIG. 3

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STACKED SHEET ARTICLE WITH RELEASE COATED REMOVABLE AREAS

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U.S. Cl. 273—139 4 Claims

ABSTRACT OF THE DISCLOSURE

A game board or the like and method of making the same comprising stacked discrete sheets, portions of which sheets have been coated with release coat areas, the release coat areas of the sheets being in registry with the release coat areas of the next adjacent sheets, continuous adhesive layers or films being interposed between adjacent sheets, the release coated portions of the stacked sheets being substantially completely separated from the main body of the sheets to permit removal.

SUMMARY OF THE INVENTION

Field of the invention

This invention is in the field of game boards or like devices, which term may be broadly construed to include puzzles, punch boards, quiz-answer games, educational devices such as testing sheets and the like, as well as constructions, toys, boxes, pop-up books, etc. wherein two or more layers or lamina of paper, cardboard or the like are to be selectively connected at predetermined portions and parts of said layers are to be subsequently displaced from the plane of the sheets.

Description of the prior art

In certain types of read-out sheets, game boards or puzzles, it is known to provide a laminar structure comprising two or more layers wherein the layers are secured to each other by adhesive applied at the adjacent interfaces of the layers in all but certain selected areas. The sheets are thereafter die cut so as to separate the non-adhesively secured areas of the sheets from the surrounding areas of the sheets except for a tab connection. The cutout areas may be removed by the insertion of a sharp tool into the area of the score or slit which separates the areas from the remainder of the sheets and the cutout areas may be thus pried from the sheets.

Usually, either the under surface of the cutout area or the upper surface of the next adjacent sheet in registry with the cutout will bear some marking or indicia which is generally coordinated with the information or decorations appearing on the uppermost sheet, i.e. the upper sheet may pose a question which is answered by information appearing on the underside of the removal area.

Prior devices of this sort have been deficient in many serious respects, which have prevented their widespread use. Since the practice in the past has been to apply the adhesive material selectively to those areas to be stuck together, it has been impossible to provide a plurality of closely adjacent removable areas. This difficulty has arisen from the fact that the areas to be coated with glue cannot be accurately controlled and there is likelihood that the glue, if over-applied, will spread. Since glues are normally applied in the liquid phase and the under layers placed in contact during such phase, the application of pressure causes an uncertain and uncontrollable spreading of the glue to areas remote from the areas to which the glue has initially been applied. Efforts to eliminate undue spreading of the glue by applying minimal quantities of glue or by spacing the areas to which the glue is applied

considerable distances from the areas to be removed, or permitting the glue to set to the nearly solid phase before contacting the under layers have often resulted in structures which are not adequately secured together and have a tendency to delaminate. This is particularly so in the critical areas directly surrounding the formation of the die cuts, it being a desideratum that a particularly good adhesion be effected in such areas.

Further, in such prior known devices, a thin neck or tab is relied upon as a means for retaining the die cut segments within the body of the sheet. Unless the dies are maintained within precise tolerances, it is possible that the area to be severed may be so lightly held or held by so small a tab as to fall out prematurely, under the influence of shipping and normal handling.

Conversely, if the neck or tab used to unite the uppermost of a series of registering cutout areas of the base sheets is too broad or heavy, it is possible, after removal of an uppermost segment, for residual increments of a prior tab to overlie the removal buttons or areas of the underlayer and thus prevent or greatly increase the difficulty of removing the under layer areas.

In prior devices it was possible for the user, in attempting to remove the uppermost area, to insert a pry completely through the upper layer and into the second layer, for instance, and to pry out portions of the lower layer. Obviously this would result in a lack of coordination between the material on the removable component and the informational areas on the upper sheet.

SUMMARY OF THE INVENTION

This invention relates to a read-out sheet or other construction, such as a box, toy or container and to the method of making the same, comprising a plurality of sheets adhesively secured together, the sheets prior to application of the adhesive, being imprinted in selected areas with a release coat portion or portions.

A continuous adhesive layer is interposed between the release coated surface of one layer and the next adjacent layer so as to define a differential adhesive bond between the layers, the bond being strongest in the areas not having the interposed release coat.

The laminar stack or composite of sheets is die cut, preferably following integration of the sheets into a stack, to sever the portions of the sheets in registry with the release coated areas from the remainder of the sheets. Severing may be substantially complete or complete without danger of inadvertent premature removal of the severed areas since, despite the release coating, a partial, temporary adhesion of the severed areas is effected.

Optionally but preferably, where the device is used as a read-out sheet the areas intended to be removed are provided with access apertures, which access apertures are slightly out of register with each other, to permit a removal tool to be inserted through the first layer to facilitate removal thereof but, by reason of the non-registering nature of the aperture of the second layer, the tool will be prevented from penetrating the second layer.

Preferably the release coat is transparent and covers printing or other indicia so that the release coat, in addition to the removal facilitating function, performs a protective function for the indicia.

It is therefore an object of this invention to provide an improved game or read-out board having removable areas and an improved method of making the same.

A further object of the invention is to provide a device of the type described wherein a series of relatively closely spaced apart removable areas may be formed.

A further object of the invention is the provision of a device of the class described which includes a series of stacked, removable areas wherein there is substantially no

danger of inadvertently removing more than one layer at a time.

To attain these objects and such further objects as may appear herein or be hereinafter pointed out, reference is made to the accompanying drawings, forming a part hereof, in which:

FIGURE 1 is a perspective view of a read-out board of the type described;

FIGURE 2 is a magnified exploded perspective view of two adjacent layers of the board of FIGURE 1;

FIGURE 3 is a magnified vertical section taken on the line 3—3 of FIGURE 1.

In accordance with the invention, the read-out device **10** is comprised of a series of sheets **11, 12, 13, 14** which are strongly adhesively secured to each other in all areas except the areas in registry with the removable button portions or areas **15**. The sheets **11** to **14** may be comprised of heavy paper, oak tag, cardboard, etc., as is well known.

The upper surface **16** of the uppermost sheet **11** is normally provided with information areas, decorations, etc., either by imprinting the surface of the sheet between the removable buttons **15** or by imprinting the buttons themselves, such as shown by the button **17** which is imprinted on its upper surface with the numeral 1.

The sheets **11** to **14**, which are normally congruent, are initially usually printed in the areas registering with the removable buttons **15, 15', 15''**. The imprinting may be effected on one or both faces of the removable buttons, as evidenced by buttons **18, 18'**—see FIGURES 1 and 2, wherein it is seen that the upper surface of button **18** is imprinted with the numeral 2 and the upper surface of the registering button **18'** directly beneath button **18** is imprinted with the letter A. It will be readily apparent that with imprinting of the type described, the numeral appearing on the button **18** may correspond with a number test question and the answer appearing on the upper face of the button **18'** may represent the correct answer to the question.

It will be appreciated that there are substantially unlimited variations of the information to be included on the sheets and the removable buttons, the device being susceptible of use as, for instance, a type of punch board, etc.

After the desired imprinting of the upper or lower faces of the sheets, or both, a release coat **19** is applied to those areas in registry with the buttons. The release coat **19**, particularly where it is applied in overlying relationship to printing, is preferably a transparent protective film forming material which may be readily applied to the paper or cardboard by silk screening, gravure or like known processes, and may comprise a varnish or may be comprised of an anti-stick material, such as silicone, quillon, etc.

It will be appreciated that the release coat may be applied to the under surface of the removable area, as shown in FIGURE 3, to the upper surface of the under-adjacent removable area, or to both said areas. Normally however, the release coat, particularly where the same comprises a varnish, is disposed over the printing material.

After all of the sheets have been imprinted and suitably release coated, a continuous layer of adhesive **20** is disposed over the entirety of the inter-faces between adjacent sheets. It will be appreciated that the adhesive may be applied either across the entirety of the under surface of the sheet **11** or across the entirety of the upper face of the sheet **12**.

After application of the adhesive, the sheets are pressed together and the adhesive is permitted to set. It will be appreciated that after setting of the adhesive, the portions of the inter-faces not having release coat protection will be firmly and securely adhered to each other, and that a light and separable bond is formed between adjacent sheets in the areas in registry with the release coats.

The stack of integrated sheets is thereafter die cut, to sever connection of the buttons **15**, etc., and the matrix sheets or webs from which the buttons are formed. The die cutting step is preferably effected as nearly as possible to the border between the release coated and non-release coated areas, but not outside such areas.

In accordance with the preferred form of the invention, a substantially complete separation is effected by the die cutting step, although it is permissible for small increments ***17a***, ***18a***, etc. of material to remain uncut.

As previously suggested, it is one important feature of the present invention that a complete or substantially complete separation may be affected, due to the light but effective inter-layer adherence achieved between the release coated areas and the adhesive.

Preferably in the same or a step subsequent to die cutting which, in the illustrated embodiment, severs the buttons in the circular lines D, there is formed through the buttons a series of access apertures **21, 22**—see FIGURE 2. The access apertures are formed by a punch which is directed against the sheets at an angle with respect to a line perpendicular to the sheets. As a result of the angular intersection of the punch and a series of registering buttons, it will be observed that the aperture **21** formed in an upper button will be angularly offset from the aperture **22** of the underneath button. This relationship is best shown in FIGURE 2, wherein a projection in dotted lines of the aperture **21** of button **18** is shown on the button **18'**, to demonstrate the angularly offset positions of said apertures.

It willl be understood from the foregoing that a removal tool T, such as a wire, pick, etc., may be inserted through the uppermost aperture **21** in a direction perpendicular to the plane of the sheets and after passing through the depth of the uppermost sheet, will stop against the upper surface of the second sheet. At this point the tool T may be used as a lever or pry for removing the uppermost button only.

From the foregoing it will be evident that there is described an improved game or punch board device comprising a plurality of layers having removable buttons or like portions which, upon removal, will progressively expose a series of similar under layers.

The read-out or game board device is substantially free from the flaws heretofore experienced with devices of this class. Specifically, the manufacturing steps are greatly simplified in that application of adhesive to selected areas and close control of timing of application of one layer to the other is not required.

While in normal manufacture it is preferred to form the die cuts after the integration of the sheets, it will be appreciated that the sheets may be individually die cut and thereafter connected together, the latter sequence being preferred where the cutout areas of adjacent sheets are to differ in size from layer to layer. For instance, it may be desired for the upper surface to define one large removable area, to expose a face for example, in the second layer the face itself including a series of removable portions, i.e. eyes, mouth, etc. which, after removal, expose features in the third layer which will vary the appearance of the face.

While the device has been described primarily in conjunction with a multi-layer game board, etc., it should be understood that the benefits of the invention, and particularly the method, have value in many other applications, e.g. box constructions, pop-up toys, or the like. In such applications, it will be appreciated that a layer or layers are coated with a release in certain areas and an overall glue layer contacted with the release coated and the surrounding areas. By this method, selected adhesion between predetermined areas is achieved, and where a die cut area is to be formed, the glue in the seprated or bent out die cut area may serve to rigidify the cutout portion (assuming the release coat to be deposit-

ed on the layer in register with the portion to be cut or bent out rather than on the cutout portion).

The order of operations, and particularly the order in which the die cutting or scoring step is performed in relation to the other steps, is not critical and, thus, the claims are not to be interpreted as limited in this respect except to the extent therein set forth.

It will be understood that the construction may comprise two or more layers without limitation and that substantially infinite uses or variations on the foregoing concepts may be made.

Having thus described the invention and illustrated its use, what is claimed as new and is desired to be secured by Letters Patent is:

1. As a new article of manufacture, a game board or the like comprising a plurality of stacked sheets, release coat areas formed on one confronting face of each pair of said sheets, said release coat areas being separated by uncoated portions, substantially continuous adhesive layers overlying, said one face of said sheets and adhesively securing said one face to the face of an adjacent sheet, the release coated areas of said stacked sheets being disposed in registry with the release coated areas of the other of said sheets, the areas of said plurality of sheets coextensive with the release coated areas being substantially separated from the remainder of the sheets, aperture means formed through said sheets in said release coated areas to provide access for insertion of a removal tool, said access apertures being staggered whereby insertion of a removal tool in a direction normal to the surface of said sheets will be blocked, the staggered access aperture location on the next adjacent sheet preventing the inadvertent removal of more than one layer at a time.

2. A device in accordance with claim **1** wherein indicia are imprinted on said one face of said sheets beneath and in registry with said release coated areas and said release coat is transparent.

3. As a new article of manufacture, a game board or the like comprising a plurality of stacked sheets, release coat areas formed on one confronting face of each pair of said sheets, said release coat areas being separated by uncoated portions, substantially continuous adhesive layers overlying said one face of said sheets and adhesively securing said one face to the other face of an adjacent sheet, the release coated areas of said stacked sheet being disposed in registry with the release coated areas of the others of said sheets, access aperture means formed through said sheets in said release coated areas to provide access for insertion of a removal tool, the areas of said plurality of sheets coextensive with the release coated areas being substantially separated from the remainder of said sheets.
substantially separated from the remainder of said sheets.

4. A device in accordance with claim **3** wherein said access aperture means are formed in the areas adjoining the separation defined between said release coated portions and the remaining portions of said sheets.

References Cited

UNITED STATES PATENTS

975,887	11/1910	Newton	273—139
1,619,081	3/1927	McLaurin	156—289 X
2,015,268	9/1935	Hammond	156—289 X
2,163,478	6/1939	Wolfe	35—9
2,608,502	8/1952	Merriman	156—289 X

FOREIGN PATENTS

507,276	6/1939	Great Britain.

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U.S. Cl. X.R.

35—9, 48; 156—289; 161—146