June 25, 1968 E. SOLOMITA ET AL 3,389,914

MULTIPLE PICTURE PUZZLE BOOK

Filed Oct. 2, 1964 2 Sheets-Sheet 1

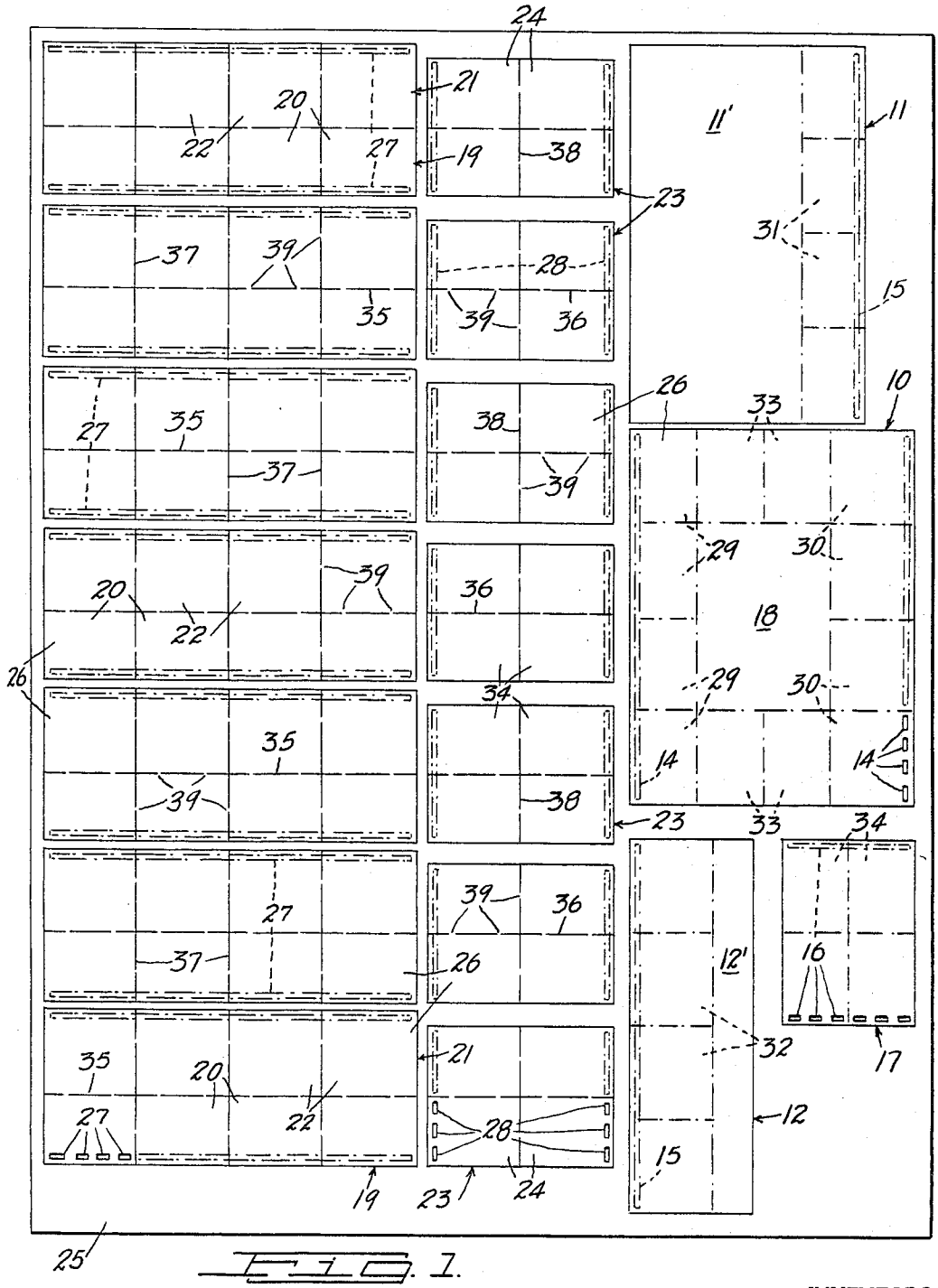


FIG. 1.

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Filed Oct. 2, 1964 2 Sheets-Sheet 2

FIG. 2.

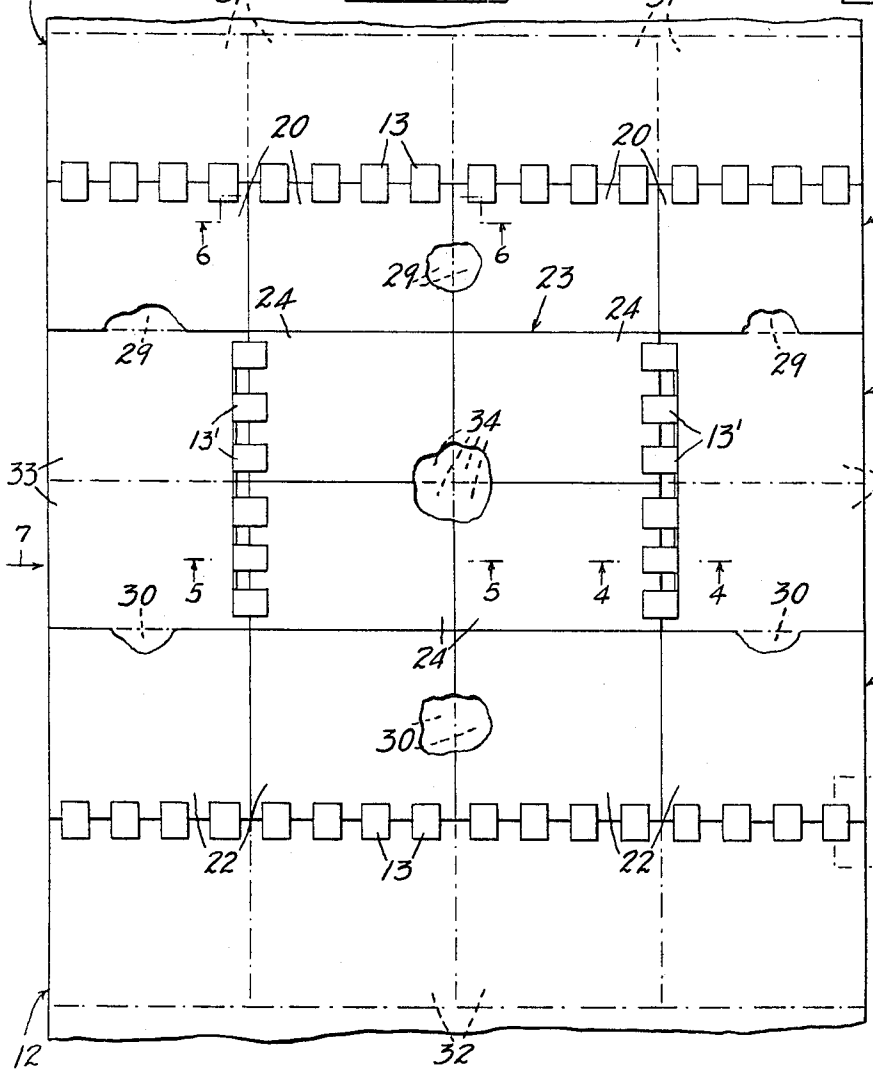


FIG. 3.

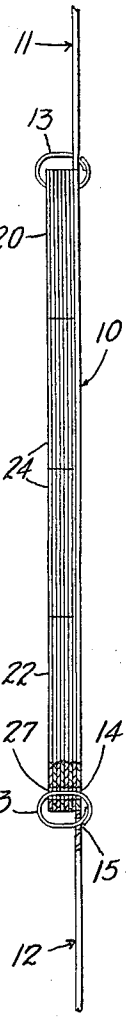


FIG. 5.



FIG. 4.

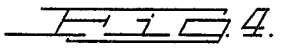
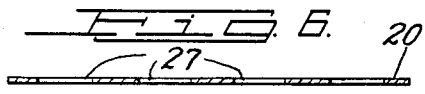


FIG. 6.



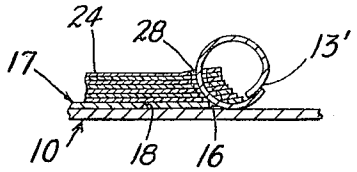
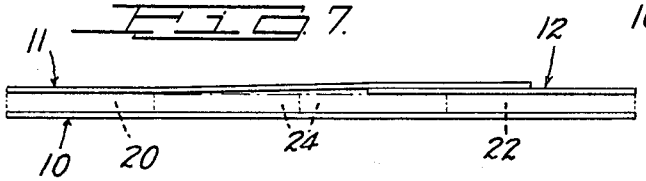


FIG. 7.



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MULTIPLE PICTURE PUZZLE BOOK

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Filed Oct. 2, 1964, Ser. No. 401,077
6 Claims. (Cl. 273—155)

ABSTRACT OF THE DISCLOSURE

A puzzle book employing a back and one or more covers wherein a multiplicity of picture elements have hinge mountings between the back and at least one cover and with other parallel hinge mountings within peripheral boundaries of the back and at right angles to the hinge cover mounting, so that all of the picture elements are maintained on the back, with part of these picture elements extendable onto part of the cover and in producing solutions to a plurality of complete puzzle pictures.

The novel features of the invention will be best understood from the following description, when taken together with the accompanying drawing, in which certain embodiments of the invention are disclosed and, in which, the separate parts are designated by suitable reference characters in each of the views and, in which:

FIG. 1 is a diagrammatic face view of one surface of a work sheet showing the arrangement of various groups of cards or elements used in the puzzle and diagrammatically illustrating the method of die cutting and perforating to temporarily retain sectional groups of cards or elements in relationship to each other, preparatory to assemblage in a book, the printing on the various cards or elements as well as the book back, covers and picture sheet being omitted, the other surface of the sheet being also printed in the areas outlined on said first surface.

FIG. 2 is an enlarged view of the book in open position, diagrammatically illustrating all of the cards or elements of the puzzle in stacked position and indicating in dot-dash lines picture fragments or sections as printed on the book back and covers, part of this showing being indicated by broken away portions and parts of the covers being broken away.

FIG. 3 is an edge view of the assemblage, as seen in FIG. 2, with part of the structure shown in section as on the line 3—3 of FIG. 2 and omitting part of the background showing to simplify this illustration.

FIG. 4 is an enlarged detail section on the line 4—4 of FIG. 1, diagrammatically illustrating one hinge binding of part of the cards or elements and the attachment thereof to the book back.

FIG. 5 is an enlarged section on the line 5—5 of FIG. 2 showing one card or element detached and omitting the hinge binder.

FIG. 6 is a view similar to FIG. 5 taken on the line 6—6 of FIG. 2; and

FIG. 7 is a diagrammatic edge view generally looking in the direction of the arrow 7 of FIG. 2 showing the book back and the two covers, but omitting the hinge binders and indicating in dotted lines the position of the cards or elements in the book when the book is in closed position.

Considering the end product as diagrammatically shown in FIGS. 2 to 7, inclusive, the puzzle book comprises a book back part **10**, a wide cover part **11** and a narrow cover part **12**. At **13** are shown conventional plastic or other split ring binders commonly known in the art for mounting the two covers **11** and **12** in connection with the book back, the binders passing through apertures **14** in upper and lower sides of the book back, one of these

being clearly shown in FIG. 3 of the drawing, the binders passing through similar apertures **15** in the edge portions of the covers **11** and **12**, one of the apertures in the cover **12** being also shown in FIG. 3. Other similar ring binders **13'** are employed, one of the same being shown in enlarged section in FIG. 4 and these binders are mounted in apertures **16** in side portions of a picture sheet **17**, which is glued or otherwise fixed to the inner surface **18** of the book back **10** centrally thereof, as will appear from a later description.

Mounted in connection with the binder **13** joining the wide cover **11** with the book back **10** is an upper row **19** of cards or elements **20**. A similar bottom row **21** of cards or elements **22** are mounted on the binder hinge **13** coupling the narrow cover **12** with **10**. Mounted on the ring binders **13'** are rectangular groups **23** of four cards or elements **24**.

To simplify the description, **20**, **22** and **24** will be referred to as picture elements having on both surfaces thereof fragment or sectional pictures which, in conjunction with pictures on other selected elements, will produce in each solution of the puzzle the proper pictures. It will be noted clearly, from a consideration of the groups or rows **19** and **21**, as shown in FIG. 1 of the drawing on the single sheet **25** which is printed, die cut and perforated, as later described, that these two groups are in each of seven printed sections reading from top to bottom in FIG. 1 and some of these printed sections have been designated by the reference character **26**. It will be noted that the group **19** of four elements **20** are narrower than the elements **22** in the group **21** on each of the printed areas **26** and that the perforations, as at **27**, which are diagrammatically illustrated by the dot-dash lines in FIG. 1, are at long sides of the respective elements. This arrangement is in contrast to the arrangement of the perforations **28** indicated by dot-dash lines in FIG. 1, which are at the narrow sides of the elements **24**. The foregoing will be clearly apparent from the mounting arrangement as shown in FIG. 2 of the drawing and, in this figure, the stacks of seven cards in each of the rows **19** and **21** and in the rectangular group **23** are all shown in an assembled relationship one upon the other with the book in open position. This would be the arrangement in which these elements will be positioned as and when the puzzle book is collapsed, as diagrammatically seen in FIG. 7, with the covers **11** and **12** disposed upon said elements as they are arranged on the inner surface of the book back **10** and with the wide cover **11** overlying the narrow cover **12**.

To simplify the illustration in FIG. 2 of the drawing, the perforations in the elements **20**, **22** and **24** have been omitted. One of these perforations is shown in section at **27** in FIG. 3 and the perforations in **24** are shown in section at **28** in FIG. 4 of the drawing. These perforations are sufficiently large to provide free movement of the various elements on the hinge binders.

Turning now to the showing in FIG. 5 of the drawing, here the perforations, as at **28** at the narrow edge of the elements **24**, are indicated on one of such elements. In contrast to the arrangement of the apertures **15** in FIG. 6 of the drawing, the arrangement of the apertures **27** longitudinally of the long edge are diagrammatically shown in one of the elements **20**, it being understood that a similar arrangement of apertures is provided in the element **22**. From this, it will be noted that the length of the apertures **27** and **28** is sufficiently long to provide a free movement on as well as engagement with the ring binders employed.

In addition to the printing of opposed surfaces of the several elements employed, the book back **10** has directly printed on the inner surface thereof an upper row of four pictures **29**, shown by the broken away portions of FIG. 2. In like manner, the lower edge of **10** has another row

of four pictures **30**, indicated by the broken away portions of FIG. 2. The cover **11** has a row of four pictures **31** printed on the inner surface thereof and the cover **12** has a similar row of four pictures **32**. The row of pictures **29** and **31** cooperate with the row of elements **20** in producing solutions to eight complete pictures. This is also true of the two rows **30** and **32** cooperating with the elements **22** for a similar purpose. Also printed on the inner surface of the book back **10** at sides thereof are two pictures **33** which cooperate with the elements **24** in providing solutions to pictures, the elements **24** also operating in conjunction with four pictures **34** printed on the upper surface of the picture sheet **17** glued or otherwise fixed to the upper surface of the central portion of the book back **10** in the solution of the puzzle.

The foregoing now completes the general arrangement and mounting of the elements upon the book back **10** and the covers **11** and **12** and, in use of the book, the start of solving the eight pictures, which can be produced in the illustration which is shown by way of designating one adaptation and use of the invention, is as follows:

It is preferable that the elements **20** in the upper left-hand corner be used to start in solving one of the eight problems. This solution can be with the picture shown in the left of the row of pictures **31** on the cover **11**. With this as a start, all of the other elements are swung on the hinge binders to find pictures which will match with the upper surface of the corner element **20**, above identified, and the left-hand picture in the printed row **31**. This solution can be on any surface of the respective elements. However, it will be apparent that, in view of the haphazard arrangement of printing which is carried out in the rows **29**, **30**, **31** and **32**, as well as in the associated pictures **33**, it will be necessary to at least swing the elements **20** in the stack adjacent the upper left hand corner element **20** onto the row **31** in finding a picture segment which will match the left printing **31** and that the stack of elements **24** beneath the last mentioned stack of elements **20** will be swung to the left to bring one of the elements **24** of the stack in position to match with the first named corner element **20** and this is repeated throughout the several elements. Here, it is important to point out that, when a solution is found between the upwardly turned element **20** and the movement of the element **24** to the left as described, the exposed picture segments of the two stacks mentioned, namely the stack **20** and the stack **24**, will naturally register with the two elements which have been moved into proper position. This will be carried out through the remainder of the elements and their movements into solution positions.

From the foregoing, it is quite understandable that, in the printing of a segment of a picture on one element, it is essential that the printed segment on the reverse side of the element will register with the associated element in any one of the rows or groupings of the respective elements. Further, in the printing operation, it is essential that the picture fragments or sections are properly arranged on each of the elements. In other words, the exposed surface of the element will always be in proper readable arrangement on the solution picture.

The foregoing is an important factor in the method of printing both surfaces of the sheet **25** in proper registration with the several printed areas **26** which will register with each other on opposed surfaces of the sheet **25**.

In printing the book back **10** and the covers **11** and **12**, no printing will take place in the area **18** of the book back where the picture sheet **17** is attached, as previously described. Here, it is well to point out that the picture sheet **17** is printed on one surface only. However, other printings can be applied to the area **11'** of the cover **11** and **12'** of the cover **12** and outer surfaces of the book back **10** and the two covers can have printings thereon. The book back preferably has small reproductions of each of the eight picture solutions thereon, particularly in helping children to determine whether or not they have a proper solution; whereas, the front surfaces of the two covers can be characterized with advertising, title, etc. The printed areas **11'** and **12'** are utilized for instructions or other descriptive matter.

It is also deemed desirable that the two adjoining center pictures **32** on the cover **12** and exposed surfaces of the elements **22**, or in other words when these elements **22** are arranged upon the two printed areas **32** mentioned, will have printed thereon descriptive details with regard to the solved puzzle, particularly when the pictures of the solved puzzle deal with animals, birds and the like to give their proper names and other information which would be of interest to the user of the puzzle.

In the method of producing puzzles of the type and kind, in addition to the printing of the sheet **25**, this sheet is then die cut in horizontal lines, such as **35** in the rows **19** and **21**, **36** in the groups of elements **23** and in vertical lines **37** in the rows **19**, **21** and **38** in the groups **23**. These die cuttings all have small uncut areas, all of which have been identified by the reference character **39** which hold the various rows and groups of elements together. The bordering die cuttings of the pairs of rows **19**, **21** and of the groups **23** will, however, be complete, so that the joined rows **19** and **21** and the four cards of the groups **23** can be handled for assemblage in the book on the respective ring binders employed, after which, the respective elements in the rows and groups can be severed one from the other, facilitating the operation of the puzzle.

In the above die cutting operation, all of the elements of the rows and groups are also perforated. Parts of the perforations **27** in one of the rows have been indicated in the lower groups of rows in FIG. 1, as well as part of the perforations **28** in the lower group **23**. However, to simplify the showing in FIG. 1, all of the other perforations have been illustrated by dot-dash lines. While the rows and groups of elements are perforated, the perforations **14**, **15** and **16** in the book back **10**, covers **11** and **12** and the printed sheet **17** are also formed and the sheet **25** is die cut, forming the borders of the book back **10**, the covers **11** and **12** and the printed sheet, facilitating removal thereof from the unitary sheet **25**, as and when the rows and groups of elements are removed.

In attachment of the rows **19** and **21** of elements, it will be understood that the row of elements **19** are first severed from the row of elements **21** in each of the printed areas **26** after they have been jointly removed from the sheet **25** to facilitate assemblage of each of the rows on their respective binders; whereupon, the elements in each row are severed from each other.

By prearrangement, positioning of the two rows of elements **19** and **21** on the ring binders will be so arranged as to produce the desired problem in solution, insofar as one row deals with stacked cards in an associated row.

From a manufacturing standpoint and in order to facilitate relationship thereof, the sheet **25** could be printed on at least one surface thereof to designate arrangement of the rows, as well as the groups one with respect to the other or the printing could be so arranged on the sheets that the upper area of FIG. 1 having the two rows **19** and **21** can be placed on the next adjacent area and so on, down through the sheet **25** and, then, the rows of each area severed and this would provide the desired arrangement of the respective rows one upon the other in the stacking in the book as illustrated in FIG. 3 of the drawing. The same thing can apply to the arrangement of the groups **23** one upon the other.

In the layout of printing the various printed sections on the cards or elements as they are arranged on the overall sheet **25**, as well as the printings of picture segments on **10**, **11** and **12** and the sheet **17**, a layout is made to distinguish top pictures of the cards or elements from what would be bottom pictures of said elements, in other words, picture segments which are printed on the sheet **25**, as shown in FIG. 1, from those that would be printed

on the reverse side of this showing. In like manner, the picture printed on the inner surfaces of **10**, **11** and **12** will be distinguished from the pictures printed on the exposed surfaces of the picture sheet **17**. This having been done in any one puzzle, the same identification characters can be utilized in printing many other types and kinds of puzzles produced according to the present invention. Here, it is also well to point out that the puzzle book can be educational, illustrative or amusing and entertaining.

As an alternative in the method of procedure for producing the final puzzle book, the work sheet **25** can simply be printed and perforated to form the various apertures **27** in the rows **19** and **21**, **28** in the groups **23**, **14** and **15** in the book back and covers and **16** in the sheet **17**. Further, the die cutting, as at **37** on the rows **19** and **21**, will be dispensed with, as well as the die cutting **36** and **38** on the groups **23**.

From the foregoing, it will be apparent that all of the elements **24** on the groups **23** will be on uncut sheets; whereas, the elements in each row would be unsevered. Naturally, the bordering die cutting of the work sheet **25** forming the boundaries of **19**, **21**, **23**, **17** and **10**, **11** and **12** will be formed.

The procedure which will then be followed will be to mount the rows **19** and **21** of joined elements on the ring binders **13** and mount the cards defining the groups **23** on the ring binders **13'** with the sheet **17** secured to the central portion of the book back **10** and, if the covers **11** and **12** have been attached to the ring binders **13**, these covers would be moved onto the outer surface of the book back and the rows **19** and **21** will be moved into positions beyond the bound edges of the book back or, in other words, assuming positions similar to the pictures **31** and **32** having the dot-dash outlines, as shown in FIG. 2 of the drawing. Then, in a single die cutting operation, the die cuts, as at **36** and **38** on the groups **23**, can be formed and controlled so as to not injure the book back **10** and the die cuttings, as at **37**, FIG. 1, will be made in the extended rows **19**, **21**, thereby severing all of adjacent elements of the puzzle book. It will be understood that, in mounting the rows **19** and **21** on the binders, these rows would be severed along the die cut lines **35** in making this assemblage by breaking the uncut areas **39** on the die cut lines **35**.

The foregoing method of procedure has the advantage of maintaining the pictures in each row **19**, **21** and further provides a free, clean severance of the pictures in each row, as well as the pictures in the groups **23** for free movement in solving the various pictures of the puzzle.

Having fully described our invention, what we claim as new and desire to secure by Letters Patent is:

1. A puzzle book comprising a book back, two covers, means hinging the covers to opposed edges of the back, a row of picture elements mounted on each of said hinge means for movement from the back onto a surface of the covers when said covers are in open position, a picture sheet having a plurality of pictures thereon secured centrally to an inner surface of the back, said picture sheet having at side edges hinge means at right angles to the first named hinge means and disposed within edge boundaries of said back, groups of picture elements mounted on the last named hinge means for movement into two positions upon said inner surface of the back, hinge edge portions of said back adjacent said picture sheet having rows of pictures applied directly to the inner surface thereof, similar rows of pictures being applied to inner surfaces of the covers adjacent said first named hinge means, other pictures being applied to the back beyond the second named hinge means, the pictures of all of said elements constituting fragments of complete pictures disposed on both side surfaces of the elements, and the pictures on said picture sheet and those applied to inner surfaces of the back and said covers having association with predetermined elements hingedly supported in connection with the puzzle book in producing solutions of a plurality of complete puzzle pictures.

2. A puzzle book as defined in claim **1**, wherein one cover is wide and the other cover is narrow, and the row of picture elements mounted on the hinge means of the narrow cover being larger in size than the row of picture elements mounted on the hinge means for the wide cover.

3. A puzzle book as defined in claim **2**, wherein the picture elements mounted on the hinge means of said picture sheet are of the same size as the picture elements mounted on the hinge means of said wide cover.

4. A puzzle book comprising a book back and a cover, means hingedly supporting the cover to the back, said hinge means forming a pivotal mounting of a plurality of longitudinally alined picture elements movable onto inner surfaces of the back and cover, means at right angles to the first hinge means and entirely within-peripheral edges of the back for hingedly mounting a plurality of other and transversely alined picture elements on the inner surface of the back for movement into different positions only on the inner surface of the back, each of said first named and said other picture elements having on opposed surfaces thereof fragment pictures of a complete picture in a haphazard arrangement, and all of said picture elements cooperating to form solutions to a plurality of complete pictures in proper arrangement of the elements on inner surfaces of the back and cover when the cover is in open position.

5. A puzzle book as defined in claim **4**, wherein inner surfaces of the back and cover have picture fragments of different characteristics to each other in position to register with picture fragments on said elements in the solution of different complete pictures of the puzzle.

6. A puzzle book as defined in claim **5**, wherein a secondary cover is hingedly coupled with the back, and the hinge of the secondary cover supporting a plurality of additional picture elements movable onto the back and said second cover.

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