Dec. 16, 1958 D. C. MARQUEZ 2,864,178

MAT WEAVING

Filed Jan. 11, 1954 2 Sheets-Sheet 1

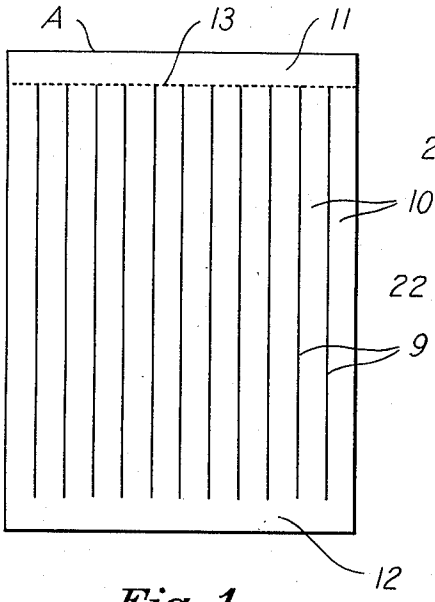


Fig. 1

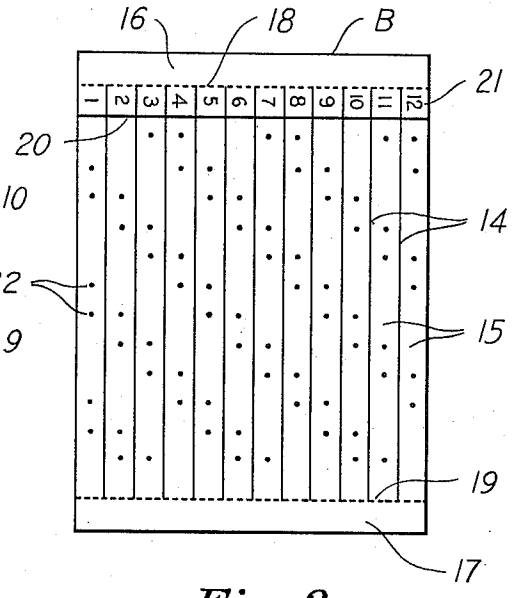


Fig. 2

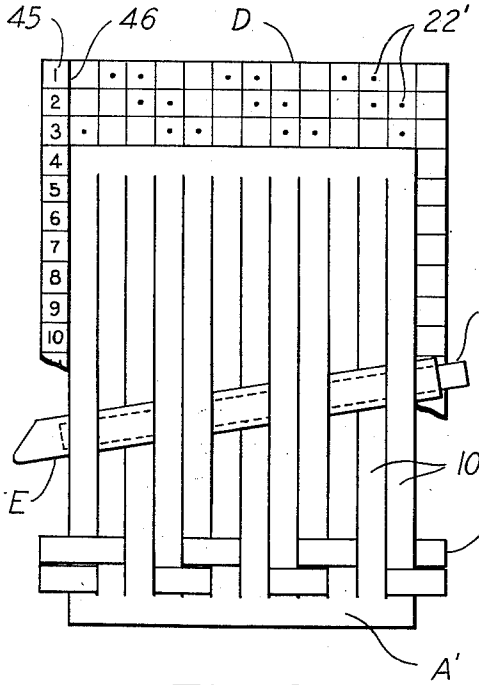


Fig. 6

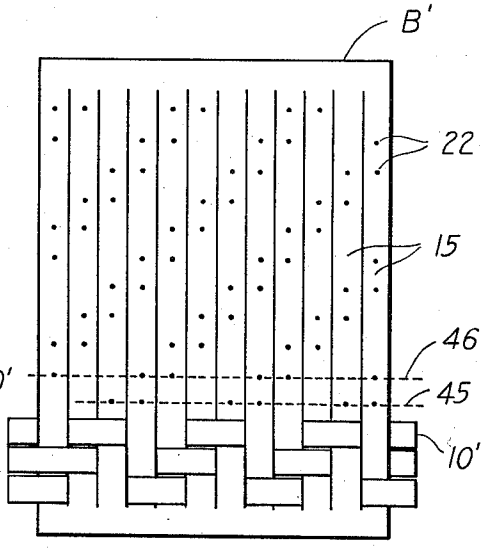


Fig. 8

INVENTOR
DANNY C. MARQUEZ
Cook and Schermerhorn
ATTORNEYS

Dec. 16, 1958 D. C. MARQUEZ 2,864,178

MAT WEAVING

Filed Jan. 11, 1954 2 Sheets-Sheet 2

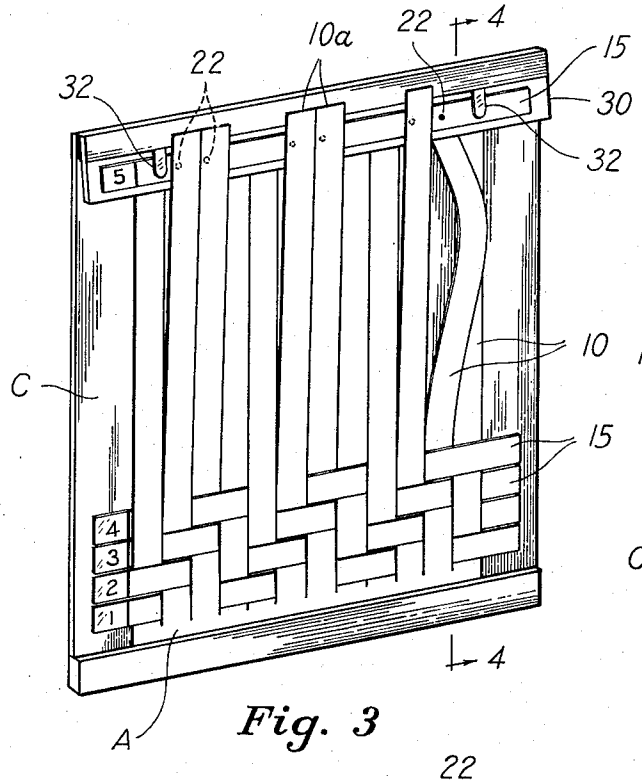


Fig. 3

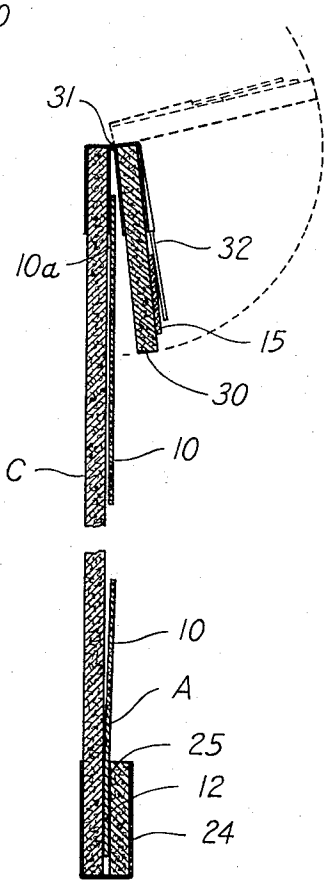


Fig. 4

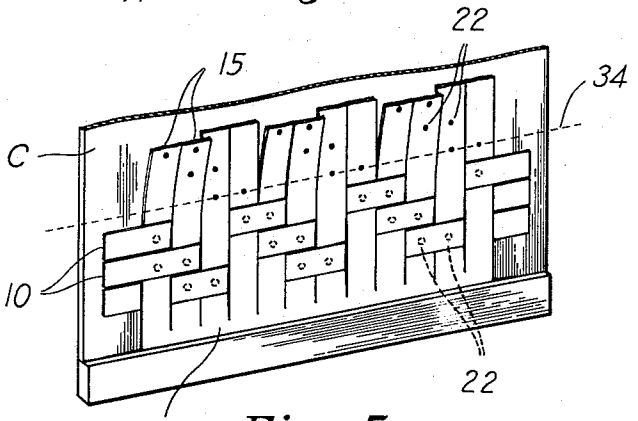


Fig. 5

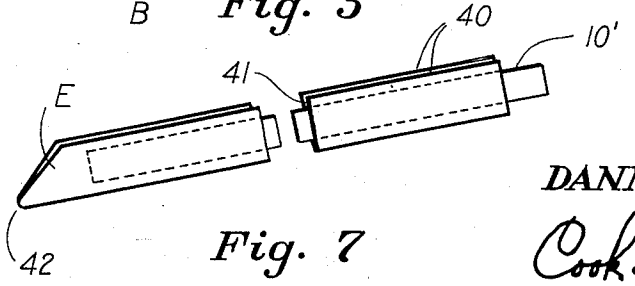


Fig. 7

INVENTOR
DANNY C. MARQUEZ
Cook and Sehermerhorn
ATTORNEYS

United States Patent Office

2,864,178

Patented Dec. 16, 1958

2,864,178

MAT WEAVING

Danny C. Marquez, Portland, Oreg.

Application January 11, 1954, Serial No. 403,109

1 Claim. (Cl. 35—15)

This invention relates to the art of weaving, and has particular reference to the weaving of flat strips of material into mats of predetermined designs.

In the present day educational system, various forms of artcrafts are taught in the primary schools. Some of the artcrafts are reduced to the simplest forms and operations appropriate to the younuger age groups. The art of weaving, for example, especially the weaving of basket form mats, is appropriate for the very young age groups but is seldom appealing to older children, partly for the reason that the finished product is usually of a very simple and unattractive pattern. After a rather brief experience with simple basket weave patterns, the average child finds the art uninteresting and monotonous. However, the weaving of more elaborate patterns which would be attractive and useful is too laborious and painstaking by conventional methods. It is generally considered beyond the capability of children to follow the complicated instructions involved in making the more attractive patterns. The value of weaving to teach color discrimination and harmony, and to teach manual dexterity, makes it desirable to devise improved techniques for weaving the more intricate designs that would appeal to a wider range of age groups.

Objects of the present invention are, therefore, to provide improved methods and apparatus and improved weaving materials which will enable children and other relatively unskilled persons to weave more elaborate and artistic designs and to make mats and other useful articles in a simple and easy manner.

Another object is to provide novel weaving apparatus and materials which may be used with very brief and simple instructions to fill the requirements of an extended age group.

Another object is to provide novel weaving materials and apparatus containing coded intelligence which can easily be translated into predetermined designs.

Additional objects are to provide coded intelligence on weaving materials in such a manner that the markings conveying the intelligence will be incorporated inconspicuously into the finished product, and to provide weaving apparatus containing coded intelligence for use with materials where it is desired that markings not be incorporated into the finished article.

Still another object is to provide weaving apparatus and materials of the type described which may be made from a variety of inexpensive and readily obtainable materials wherein the complete equipment, including apparatus and materials, may be fabricated at relatively low cost.

The invention deals with the weaving of flat colored strips of suitable opaque or transparent material such as paper, plastic film, etc. The weaving material is preferably manufactured and furnished in the form of two slitted sheets having lines of perforations intersecting the ends of the slits a short distance from the ends of the sheets whereby marginal portions of the sheets may be readily torn off to sever the connection between

the strips for weaving purposes. The necessary intelligence for forming a predetermined pattern may be contained upon one of the sheets of strips which goes into the woven product, or it may be contained upon an auxiliary sheet or other device which is used in conjunction with the weaving materials but does not become incorporated in the woven product. The general principles of the invention may be applied in a variety of ways with slightly different weaving techniques to accomplish the general objects of the invention. The weaving may be facilitated by a special loom for holding the weaving materials and by the use of a novel shuttle device for threading detached strips through the slits of a sheet of weaving material.

The invention will be better understood and the foregoing and other objects and advantages will become apparent as the details of the invention are hereinafter described with reference to the accompanying drawings illustrating certain preferred embodiments. It is to be understood, however, that the invention may take other forms, and that all such modifications within the terms of the appended claim are included in the invention.

In the drawings:

Figure 1 is a view of a slitted sheet of material forming a first set of weaving strips;

Figure 2 is a view of a second slitted sheet of material forming a second set of weaving strips containing the necessary intelligence for producing a predetermined pattern when used in conjunction with the material of Figure 1;

Figure 3 is a perspective view illustrating the weaving materials of Figures 1 and 2 in use with a novel loom which forms a part of the invention;

Figure 4 is a sectional view taken on the line 4—4 of Figure 3;

Figure 5 is a fragmentary view similar to Figure 3 but showing a different arrangement of the weaving materials in the loom;

Figure 6 is a view of a modification wherein the intelligence used for forming a predetermined pattern is not incorporated into the finished product;

Figure 7 is a perspective view of the shuttle illustrated in Figure 6; and

Figure 8 is a view of another modification combining certain features illustrated in Figures 5 and 6.

Figures 1 and 2 illustrate the weaving materials used in the first embodiment of the invention. In Figure 1, the sheet A contains a plurality of parallel slits **9** forming the strips **10**, the slits terminating short of the ends of the sheet to leave the strips integrally connected together in the marginal or end portions **11** and **12**. A line of perforations **13** intersects one end of the slits whereby the marginal portion **11** may be torn off to separate the strips at that end of the sheet. The free ends of strips **10** resulting from the tearing off of end portion **11** are designated by the numeral **10***a* in Figures 3 and 4.

In Figure 2 the sheet B is similarly slitted at **14** to form strips **15** which are connected together at the marginal portions **16** and **17** of the sheet. Lines of perforation **18** and **19** intersect the ends of the slits at the respective ends of the sheet whereby only the marginal portion **16** may be torn off to separate the strips at only one end, or both marginal strips **16** and **17** may be torn off to separate the strips at both ends. The line **20** is a matching line which is printed on the sheet to separate the printed strip members **21** from the intelligence **22**. The intelligence **22** comprises suitable indicia, such as printed dots or the like.

The materials of Figures 1 and 2 are used with the loom C, as shown in Figures 3 and 4. The loom C may be made of cardboard or other suitable material having

the necessary stiffness to form a holder for convenient manipulation of the weaving materials in the manner to be described. The loom has a base or back board equipped at one edge or end, which is to be positioned toward the operator, with a strip **24** forming a pocket **25** to receive the marginal portion **12** of sheet A. The end of the loom away from the operator is equipped with a flap **30** mounted on a suitable hinge **31** to swing through an arc as indicated by broken lines in Figure 4. The dimensions of the loom are such that when the marginal portion **12** of sheet A is inserted in the pocket **25**, and the marginal portion **11** is torn off, the free ends **10***a* of strips **10** may be disposed under the flap **30**. Flap **30** is equipped with transparent fingers or clips **32** for holding an individual strip **15** on the top thereof as shown. The loom is somewhat wider than the sheet A, and preferably slightly wider than the length of strips **15**.

A weaving operation using the weaving materials A and B illustrated in Figures 1 and 2 and the loom C illustrated in Figures 3 and 4 is started by tearing off the marginal portion **11** of sheet A, placing the marginal portion **12** in the pocket **25** of the loom, and placing the free ends **10***a* of the strips **10** under the flap **30**, as described. Then the marginal portions **16** and **17** are torn off the sheet B to separate the strips **15**. The first strip **15** is placed under the clips **32** with the matching line **20** aligned with the left edge of the sheet A. This first strip **15** is observed to have six marks **22** thereon. The free ends **10***a* of those strips **10** which underlie the marks **22** are then lifted from unedr the flap **30** and placed on top of the first strip **15** until each mark **22** is thus covered by one of the strips **10**. In the intervals where there are no marks **22** on the strip **15** the strips **10** are allowed to remain under the flap **30**. The first strip **15** is then moved down betwen the underlying and overlying strips **10** to the lower end of the sheet A.

Flap **30** is then raised to place the overlying strips **10** under the flap and the second strip **15** is placed under the fingers **32** with the matching line **20** aligned with the left edge of sheet A. It will be observed that the marks **22** on the second strip **15** are in different positions from the marks on the first strip, and so the proper strips **10** are then lifted to cover the marks **22** on the new strip **15**. When this has been accomplished the second strip **15** is moved downwardly against the first strip **15** and all the strips **10** overlying the flap **30** are again positioned under the flap as before. The foregoing operations are repeated for each of the strips **15** in turn until they have all been interwoven with the strips **10** to complete a mat according to the predetermined design established by the relative positions of the marks **22** on the sheet B. Figure 3 illustrates an intermediate step after four of the strips **15** have been woven and the strips **10** are being removed from under the flap **30** to be placed on top of the marks **22** of the fifth strip **15**. The marks **22** are thereby all covered by the strips **10** as the weaving proceeds. After the weaving is completed, the loose ends of the woven strips may be bound with adhesive tape or other suitable material to hold them together in their woven relationship.

Figure 5 illustrates a variation in procedure wherein the strips **15** occupy a vertical position and the strips **10** a horizontal position relative to the operator. In this arrangement only one of the marginal portions **16** or **17** is removed from the sheet B and then the other end of the sheet is inserted in the pocket **25**, with the free ends of the strips disposed under the flap **30**. The numbers **21** are not needed. The sheet A is prepared by not only tearing off the top marginal portion **11** on the perforated line **13**, but also using a scissors to sever the bottom marginal portion **12** at the lower ends of the slits **9** to detach all the strips **10** from the sheet A and from each other. A strip **10** is then placed under the fingers **32** on the flap **30**, but it will be observed that the strip **10** has no marks **22** thereon. In this case the strips **15** to be lifted out from under the flap **30** are those not having marks **22** disposed on an imaginary line **34** at the bottom of the sheet B. The strips **15** having marks **22** on the line **34** are allowed to remain under flap **30**. After the first strip **10** is moved down to the bottom of sheet B, the imaginary line **34** assumes a position at a higher level through the marks **22** which are immediately above the last woven strip **10**, as will be apparent in Figure 5. Thus the marks **22** are all covered by the strips **10**.

When it is not desired to have the marks **22** incorporated in the finished mat, as would be the case in weaving with transparent materials, the indicia may be provided on a separate sheet D as shown in Figure 6. In such case the weaving materials comprise two sheets similar to the sheet A in Figure 1, one of which need not be provided with the line of perforations **13** and the other being provided with lines of perforations at both ends of the slits **9**. Thus, the first sheet is designated A′ wherein the line of perforations **13** in Figure 1 which is not used is not shown in Figure 6. The second set of strips which are to be interwoven with the strips **10** of sheet A′ are designated by the numeral **10′**. The strips **10′** are woven through the strips **10** with a shuttle E, the details of which are shown in Figure 7.

The shuttle E comprises a narrow piece of relatively stiff material having two leaves **40** folded over to form a pocket **41** open at one side and end to receive one of the strips **10′**. The other end of the shuttle is pointed at **42** to facilitate its insertion over and under the strips **10**.

The guide sheet D in Figure 6 comprises a rectangular piece of paper or cardboard ruled with horizontal and vertical lines having the same spacing as the width of strips **10** and **10′**. These lines form a checkerboard of squares to contain the marks **22′** which determine the weaving pattern. A column of numbers **45** is provided along one edge of the sheet and separated from the ruled squares by the matching line **46**, as shown.

To weave a mat as shown in Figure 6, the guide sheet D is first placed under the sheet of material A′ with only the first horizontal line of marks **22′** appearing above the top edge of sheet A′. Then the shuttle E with a strip **10′** therein is inserted over each strip **10** which is aligned with a blank square appearing on the sheet D and under each strip **10** aligned with a square bearing a mark **22′**. After the shuttle has been inserted through the entire width of sheet A′, the projecting right end of strip **10′** is held in position with one hand and the left end of the shuttle is drawn to the left, removing the shuttle, leaving the strip **10′** in woven position to be pushed down to the bottom of the sheet A′. The same process is repeated with each strip, Figure 6 illustrating the position of the sheet D and shuttle E for the insertion of the third strip **10′** to form the same pattern shown in Figures 3 and 5.

In Figure 6, it will be observed that the weaving materials which are consumed in making a mat do not require any printing, the part having the printing being usable over and over to make any number of mats. There is also the corollary advantage that the weaving materials, after having been purchased with a particular pattern in mind, may be used for making an entirely different pattern since identical weaving materials are used in this case for all patterns.

This advantage may be obtained in Figure 3 by inserting one of the blank strips **10′** of Figure 6 under the fingers **32** of the loom along with each printed indicia strip **15**. Then, after the designated strips **10** have been withdrawn from under the flap **30** and placed on top of the marks **22**, the printed strip **15** is removed and the blank strip **10′** alone is moved down to its proper woven position. The finished mat then comprises the two sets of strips **10** and **10′** and the indicia strips **15** may be saved for further use with new weaving materials.

Another variation is shown in Figure 8 which combines certain features and advantages of the different arrangements hereinabove described. In this arrangement the weaving materials comprise the blank strips **10′** and a

sheet B' of printed strips quite similar to the sheet B in Figure 2. The strips **15** of the sheet B', however, are left connected with the sheet at both ends, and the only printing thereon comprises the marks **22**. The strips **10'** are woven with the shuttle E, passing the shuttle over the marks **22** and under the strips **15** having no marks in the position to be occupied by the particular strip **10'**. As shown in Figure 8, for example, three strips **10'** have already been woven, and so the imaginary line **45** indicates the line of marks **22** which are to be considered in weaving the next strip **10'**. Thus, the fourth strip **10'** would be inserted from the right over the first two strips **15**, under the next two strips **15**, over the next two strips **15**, etc., to cover all the marks **22** in the line **45**. After the fourth strip **10'** was thus woven into the sheet B', the fifth strip would be woven according to the intelligence contained on the imaginary line **46**, and so on.

A characteristic feature of all the embodiments in which the intelligence is woven into the finished mat is that the markings are all covered and concealed by the interwoven strips, any exposed mark indicating an error in the weaving. Such arrangements have the advantage of easily revealing the error to the child without requiring careful scrutiny of the symmetry of the pattern.

The necessary intelligence to produce a predetermined pattern may be incorporated into the weaving materials or into the apparatus to be used therewith in still other ways, but the present examples of intelligence means will serve to illustrate the most practical forms of the invention and enable others skilled in the art to utilize the principles thereof. With the aid of such intelligence very artistic and intricate patterns may be woven as easily as the simplest pattern.

Having now described my invention and in what manner the same may be used, what I claim as new and desire to protect by Letters Patent is:

A pair of sheets of material having parallel slits defining strips of weaving material, indicia distributed along the strips of one of said sheets at predetermined intervals corresponding to the width of the strips of the other sheet to designate over and under passes of said strips of the other sheet for weaving a predetermined pattern, said slits in said one sheet terminating at a distance from the ends of the sheet, lines of perforations extending across said one sheet perpendicular to said slits and intersecting the ends thereof for detaching the unslitted end portions of said one sheet, and numbers on the strips of said one sheet inside one of said lines of perforations to designate the order in which said strips are to be used in weaving the slits in said other sheet also terminating at a distance from the ends of the sheet, and a line of perforations extending across said other sheet perpendicular to the slits and intersecting the ends thereof for detaching one unslitted end portion of the sheet.

References Cited in the file of this patent

UNITED STATES PATENTS

532,110	Stockmann	Jan. 8, 1895
736,448	Seegmiller	Aug. 18, 1903
1,081,169	Terashima	Dec. 9, 1913
1,112,799	Hough	Oct. 6, 1914
1,329,850	Pye	Feb. 3, 1920
1,578,536	Lloyd	Mar. 30, 1926
2,186,692	Boyer et al.	Jan. 9, 1940
2,199,515	Woods	May 7, 1940
2,704,878	Green	Mar. 29, 1955