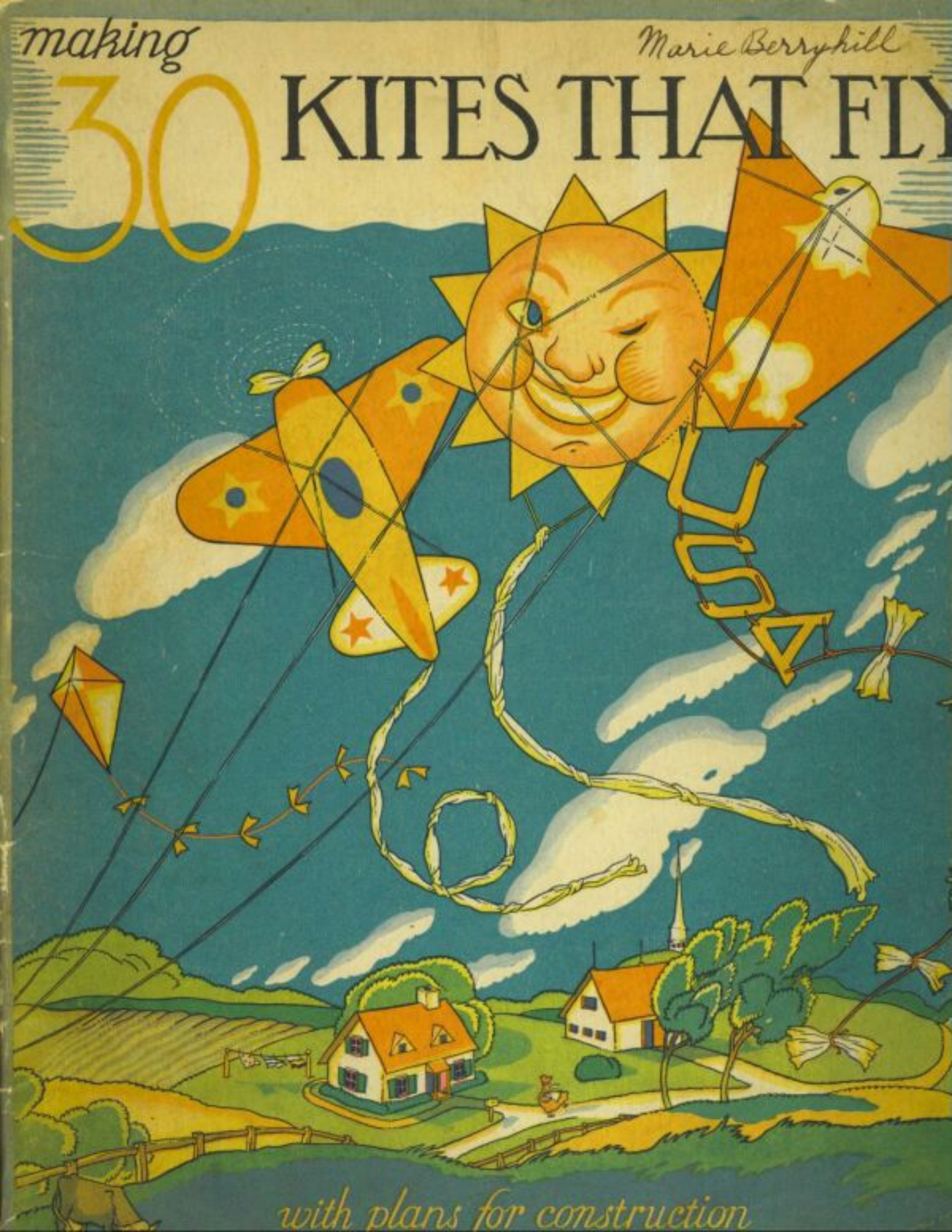
making

Marie Berryhill

30 KITES THAT FLY



with plans for construction

Contents

All boys are thrilled to make their kites and to fly them. Here is a book with complete plans and step-by-step directions for making 20 different kites. Designs for building 10 additional kites are given for those who have mastered the building of the first 20. Thirty kites to build and fly!

Edwin T. Hamilton, author of *Making 30 Kites That Fly*, is a regular contributor of articles on model airplanes and general handicraft to national magazines and is a well known lecturer on these subjects throughout the country. He is a former magazine editor. He served as a flying officer in the Royal Air Force throughout the World War and has taught flying over a national radio hookup. Mr. Hamilton is the author of *Building Model Airplanes That Fly, Coping Saw Carpentry, Complete Model Aircraft Manual, The Boy Builder, Handicraft For Girls, Popular Crafts for Boys,* and *Prizes and Presents.*

Making 30 Kites That Fly

by

Edwin T. Hamilton

Author of

Coping Saw Carpentry, Complete Model Aircraft Manual, The Boy Builder, Handicraft for Girls, Prizes and Presents, Popular Crafts for Boys, Building Model Airplanes that Fly

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Making 30 Kites That Fly

It is doubtful whether anyone knows the true origin of the kite. It has been handed down from generation to generation until the name of its inventor has become little more than a myth. We do know, however, that no sport offers so much for so little. When watching the kite enthusiast, one wonders whether the designing and building or the actual flying brings the most fun. He has no limits except those of his own imagination. New ideas are completed in the shop and then tested in the field. What a thrill when some pet design soars into the clouds with a tug on the string that is almost human!

This book contains complete plans and step-by-step instructions for making twenty types of kites. Designs for ten additional kites are given in the back of the book for those who have already mastered the building of the first twenty. Thirty kites you can easily and quickly build; thirty kites to fly and thrill you! Here's your opportunity to join the thousands who find excitement in the shop, thrills in the open and the priceless satisfaction of mastering the sky!

TOOLS

Kite making requires very few tools. Many build kites with nothing more than a good pocket knife. However, for general purposes, a good knife, block plane, try-square, scissors, rule, sandpaper and pencil will meet every need.

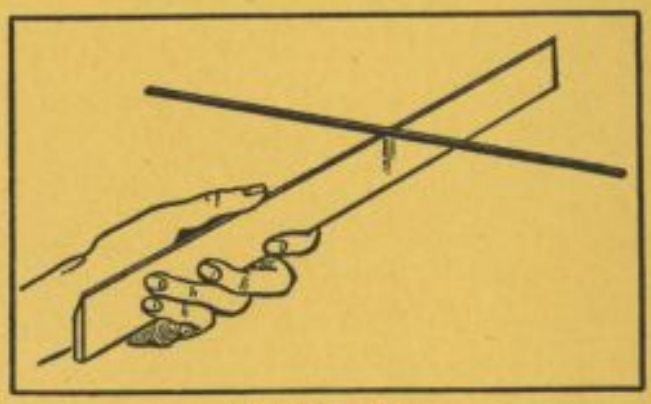
Knife Any knife of good steel having a large and a small blade is ideal for notching, cutting and shaping kite sticks. See that it is sharp when purchased and then keep it so.

Block Plane A small block plane will be found splendid for planing sticks down to proper size. Such a plane can be bought at any hardware store.

Try-Square As true joints are necessary for well-balanced kites, a try-square will prove of value to the builder. One can be purchased at any five-and-ten-cent store.

Scissors For general use, scissors with long blades should be provided for cutting the coverings of kites. If two pairs can be obtained, a small pair with slim, short blades will be found useful for cutting curves of small diameters.

Rule As both short and long dimensions are used in kite making, a zigzag



Balancing Stick

rule is usually preferred. Such a rule can be four or six feet long and will fold into a 6" length. For this reason it is quite convenient to handle.

Sandpaper A minimum of two grades of sandpaper should be provided for kite work. A package of assorted grades can be had at most five-and-ten-cent stores for a nickel. If there is not such a store in your neighborhood, larger, single sheets can be purchased at any hardware store. Obtain a sheet of No. 1, which is rather coarse, and a sheet of No. 0, which is quite fine.

While these tools do not represent all that can be used in kite work, they will prove sufficient for all the designs given in this book. Other tools convenient to own will suggest themselves as the work proceeds.

MATERIALS

Wood Practically any wood may be used for kite sticks as long as it is well-

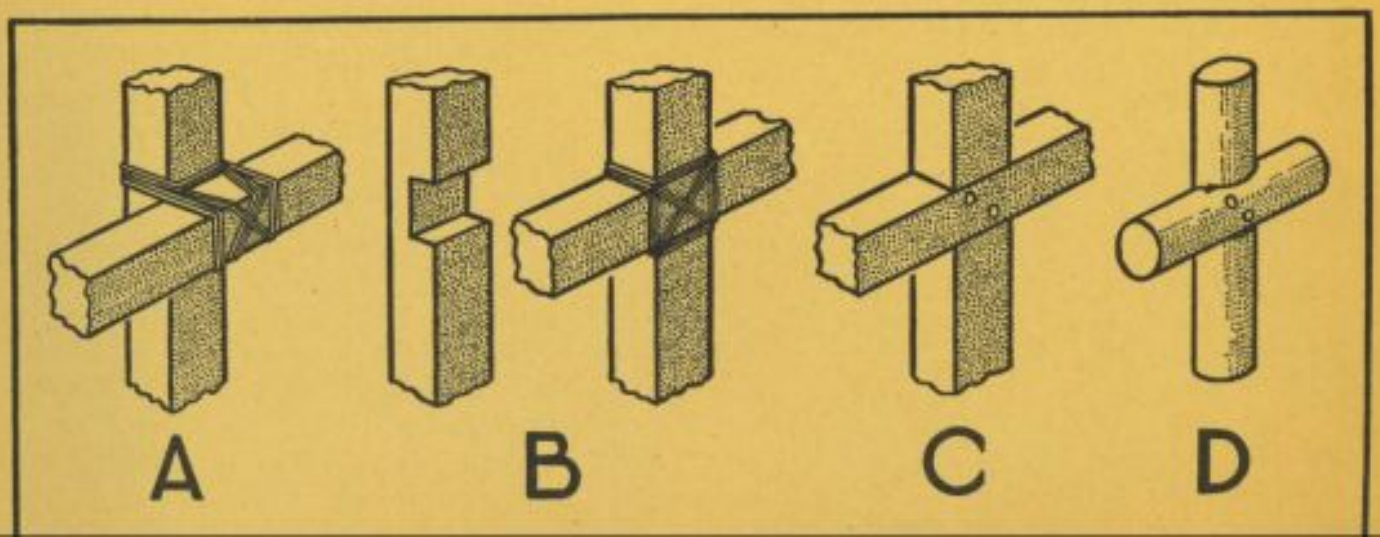
seasoned and straight. Pine is widely used, although spruce is preferred by expert kite builders. Such sticks are not difficult to obtain. Old boxes, such as fruit crates, will provide splendid material. Dowel sticks, such as shown in the illustration "Joints" at "D", can be used, and in many cases, model airplane supply or hardware stores carry sticks suitable for kite making. Split bamboo is another wood often used by the kite builder. It is splendid for small kites and for obtaining curved outlines on kites of all sizes. It can be quickly and easily bent to any desired shape. Bamboo strips can be split from old fishing rods, porch screens, or rug poles. If these cannot be found around the house, sporting, hardware, or general stores can provide such poles. Remember that any wood that can be utilized for the particular job you are doing is the right wood for that job, so look around your home, yard, school, or even on rubbish heaps for kite material.

Coverings Paper or cloth are used to cover kites. The former is preferred for small or medium-sized kites such as are given in this book. For those under two feet in overall length, common tissue paper may be used to good advantage. Such paper can be purchased by the sheet at most stationery stores. For medium-sized kites running from two to three feet in length, a slightly heavier paper is best. Japanese tissue, such as is used on model airplanes, is splendid for kite work. It is tough, durable and at the same time quite light. Ordinary tracing paper, the various types of rice paper and even newspaper may be used on such kites. A light weight wrapping paper can be used for box kites and others of similar construction. Crepe paper is a favorite with some kite builders. It has many advantages. Such paper results in smooth flying and can be purchased in a great variety of brilliant colors. While it weighs more than tissue and is not easily pasted, its colors lend themselves to decoration without paint, and can therefore be used to great advantage on figure and other decorative kites.

String Small kites may be flown with buttonhole twist, carpet thread, or light twine. For medium-sized kites, ordinary wrapping twine of good grade, fishing line, or hat maker's blocking cord can be used. String is also used for "framing" or "outlining" kites. The same string that is used for flying the kite may be used for forming its outline.

Paste A good grade of paste can be used to fasten paper coverings over kite frames. Care must be taken when using any adhesive of this kind to see that it is allowed plenty of time for drying before being used.

Glue Many kite builders prefer to use nothing but liquid glue for all adhesive



purposes. It is recommended, as it can be used for not only attaching covers to frames but for reinforcing lashed joints as well. There are a number of good liquid glues on the market which can be purchased at hardware, stationery, or five-and-ten-cent stores.

Nails Nails are sometimes used for holding joints and outline strips to frames. As they have a tendency to weaken the surrounding area through which they go, a nailed joint is not recommended. In some cases, however, they are desirable. Tiny brads, carpet and small thumb tacks should be used for nailed joints. At "C" and "D" in the illustration "Joints" will be seen such construction. The use of a thumb tack for holding bamboo outline strips to a frame is shown in the illustration "Bamboo Joints" at "A".

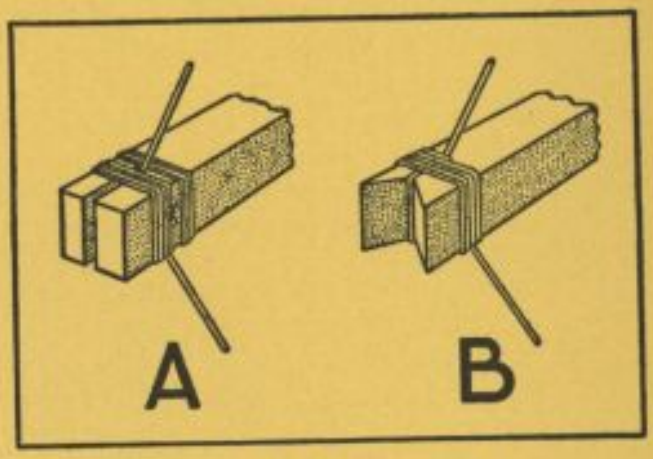
Paint Water colors or tempera paints are recommended for painting designs and figures on tissue, wrapping, or other paper coverings. As all the kites in this book are covered with paper, the painting of cloth will not be discussed.

Cloth The only cloth used on the kites in this book is for tails. Various types of cloth tails are shown in the illustration on Page 6 at "C", "D", and "E". These require no particular cloth. Most tails of this type are made of rags and scraps found around the house. They are sometimes dyed bright colors to add to their decorative value, or pieces of contrasting colors are used to make a gay effect.

Decorations Colored crepe paper makes a splendid covering for festive kites. Painting with bright colors, the addition of brilliant streamers, paper festooning, and gayly dyed cloth add decorative value to any kite. As the builder proceeds along the path of the kite enthusiast, ideas of his own for the decoration of kites will suggest themselves.

GENERAL BUILDING INSTRUCTIONS

Frame Sticks All sticks used in forming the framework of a kite should be prepared with great care. Plane the stick until within 1/16" of exact size on all sides. The excess 1/16" material is then sanded off with sandpaper. Start with the coarse paper and finish with the fine to bring it to a satin smoothness. Each stick must then be given the balance test. Locate its exact center and place this point on the edge of a knife or rule, as shown in the illustration "Balancing Stick" on Page 2. If one end drops below the other, it must be lightly sanded until its excess weight has been removed. The balance test is then repeated. When this has been completed, the necessary notches are cut for joints, if these are needed, and the ends of the stick slit or notched for outline strings or strips.



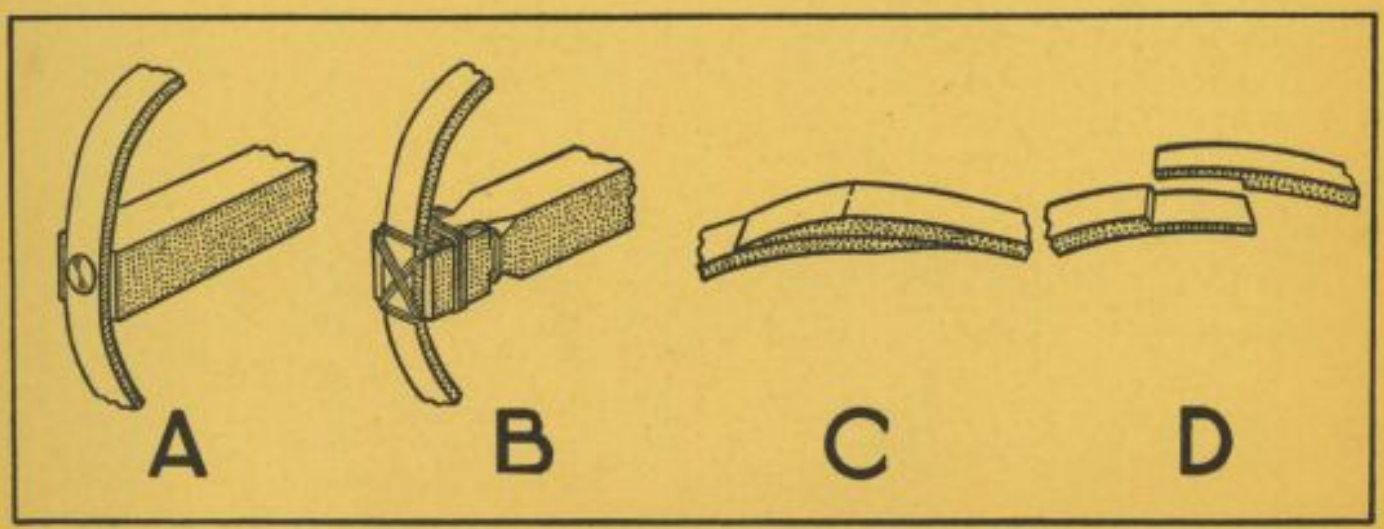
Outline String Attachments

Joints The making of the joint where two sticks cross each other can be done by two methods. On Page 3 under "Joints" these methods of construction are shown. At "A" is seen the common crossed-and-lashed joint. Such a joint can be further reinforced by applying glue to the joint. The lashing is then applied, as shown, and tied with an ordinary square knot. Such a joint is quite strong and if tied with strong twine, fishing line, or wire, will serve all general stresses placed upon it. The lashing must be pulled very tightly and held in position while the knot is being tied. At "B" is shown the halved joint. This is made by notching both joining sticks, as shown, and then gluing

and lashing them together. The notch must be cut exactly the width of the stick that is to fit into it and just half its thickness. Cut both notches for a snug fit. Glue is then applied, the two notches fitted into each other and the joint tightly bound, as shown. The joint shown at "C" is a halved joint nailed together instead of being bound. The same type is shown at "D" with dowels being used for framing sticks. Such a joint is not recommended except where little or no stress is placed upon it. When making cross joints, such as those shown in the illustration, test them with a try-square to see that the sticks are at right angles to each other.

Bending Wood Outline curves can be made with split bamboo or thin strips of other wood. The bamboo is preferred because it can be handled and bent far easier than other woods. Bamboo is bent by heating. This can be done over a candle, gas burner, around an electric light bulb, over the tip of an electric iron, or any other heating appliance. Care must be taken not to burn the wood. The bend must be made gradually and held in position until the wood has cooled. Other woods are bent by soaking in hot water to loosen the fibres before attempting to make the bend. Allow the wood to dry while being held in the desired position. Bamboo may also be bent in this manner, but heat is best for such wood.

Outline String Attachments In many kites string is used to form their outlines. There are two accepted methods of attaching such outline strings to the ends of frame sticks. These are shown in the illustration "Outline String Attachments". The most common method is shown at "A". It is made by slitting the end of the stick and passing the string into the slit. It is then tightly wound around the stick, passed through the slit again, and its free end permitted to extend to the next stick from the opposite side. An anchor string is then wound around the stick just in front of the protruding string and over the slit to prevent the string from slipping off the end. This safety string is tied with a square knot, as shown in the illustration. The second method is shown at "B". The principle of this attachment is the same as the one at "A" except that a V-shaped notch is used in place of the slit. Cut the groove with your knife in the end of the stick. Allow the string to pass through this groove. Hold the string tightly against the top and bottom of the stick and wind its free end around the stick over the string that is held against the stick. When the string is on the opposite side of the stick from which it first came, slip your knife under the wound portion, raise it, and pass the free end under it. This end must also pass through the first bend of the string and then out. To start a string,



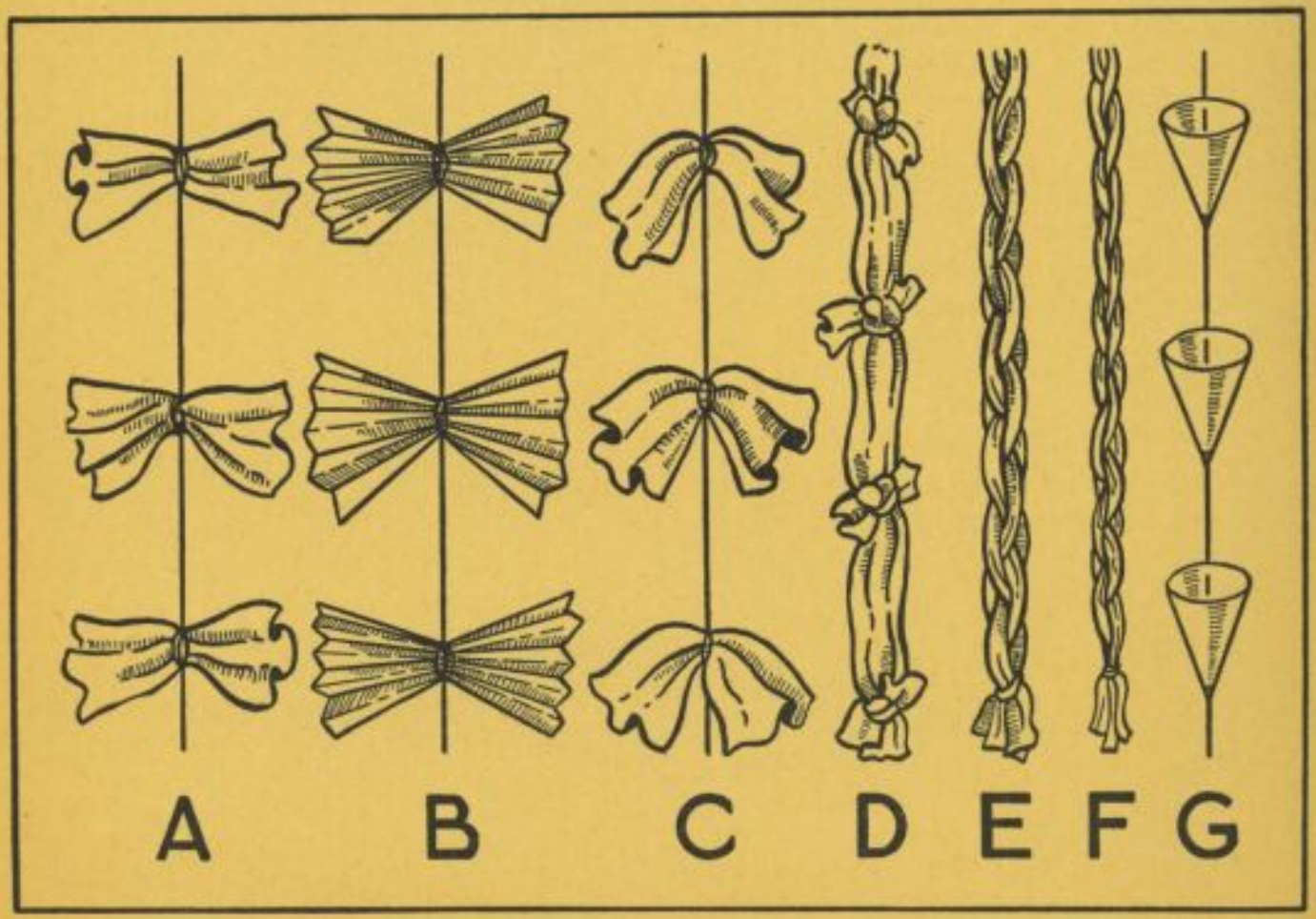
Bamboo Joints

tie a large knot about 3″ from its end. Pass the knot into a slit end, wind it around the other sticks, as shown here, and then tie its free end to the free 3″ left on the knotted end. Do not fasten your string outlines so tightly that the sticks will bend or possibly break.

Splicing and Joining Bamboo When using bamboo for outline purposes, it may be fastened to the ends of the sticks by two methods. These are shown in the illustration "Bamboo Joints" at "A" and "B". The first one shows a small thumb tack, while the second illustrates the notched and bound method. The splicing of bamboo ends can be accomplished as shown at "C" and "D". These should be glued or cemented, and then tightly wrapped with string.

Covering When covering your kite allow the paper to be taut, but not tight enough to change the form of the kite's outline. This should be followed in all kites with the exception of the one given on page 21. Cut your paper about 1″ larger on all sides, so that a 1″ hem can be turned over the string or stick forming the outline. Spread the paper smooth on a flat surface when covering is to be done. The kite frame is then placed on the paper with the "spine", or long vertical stick, down. Turn the hem over the outline strings and glue it securely in place. Allow the glue to dry thoroughly. When fastening a curved portion of the outline, snip the hem at ½″ intervals and fold over the flaps. Do not glue the paper to the spine or cross sticks.

Kite Tails While there are a number of tailless kites in this book, the majority have tails attached. These may be made in a number of ways. In the illustration shown below seven types are given. At "A" are the usual squares of paper gathered at the center in the manner of a bow along a string. The tail at "B" is the



Kite Tails

same except that the paper is folded in pleats. At "C" is a tail consisting of rag squares gathered at their centers along a string. The tail at "D" is of knotted rags, while the one at "E" is braided rag strips. At "F" is one of braided paper strips, while the last at "G" shows paper cups being used on a string. Wind will determine the length of tail necessary. Begin with one about twenty feet long and then experiment by adding or removing sections. Use as little as possible for steadying effect on the kite, as air resistance and not weight is the chief function of a kite tail.

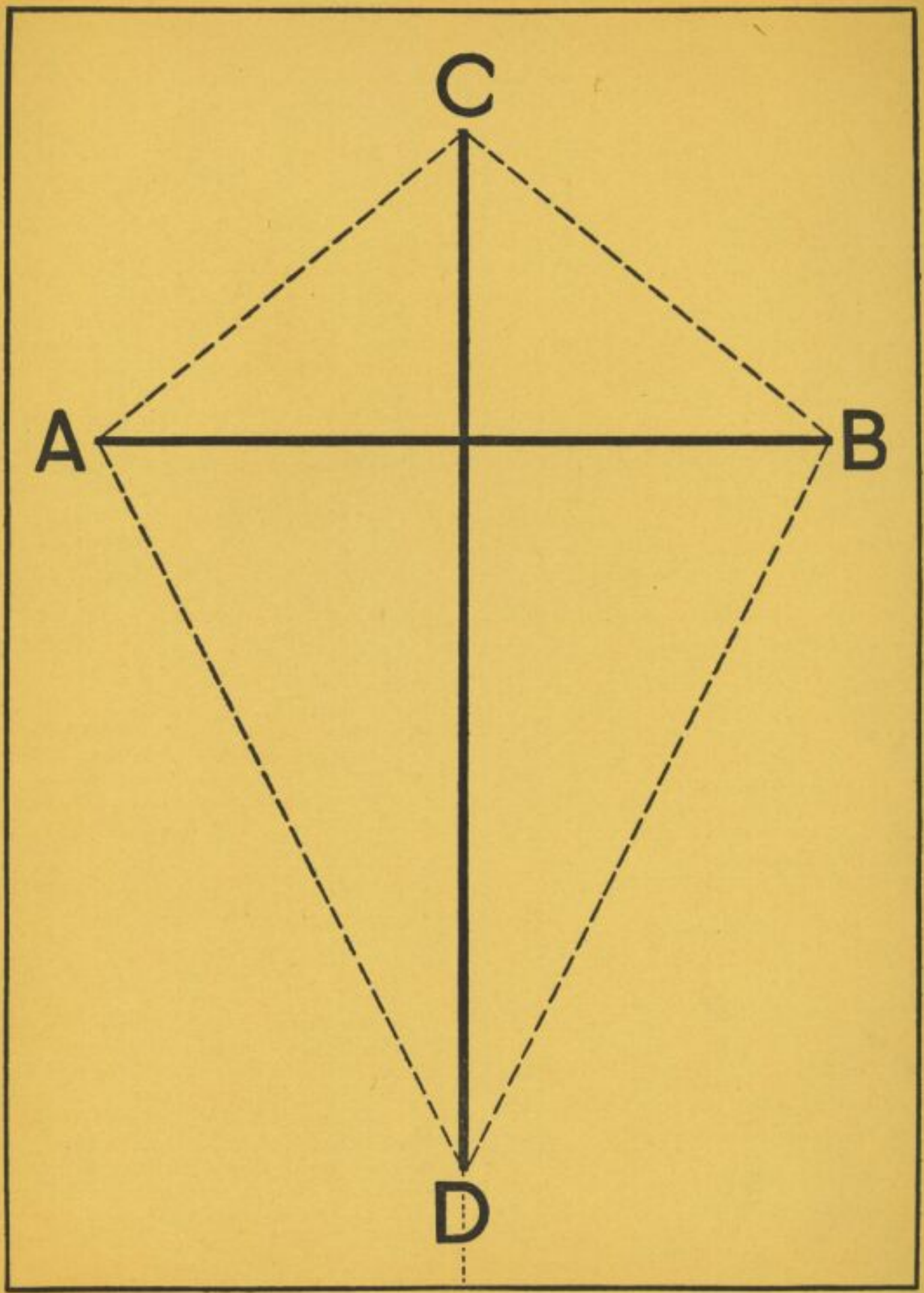
Bridles The flying string of a kite is attached to it by means of a bridle. These can be noticed in the illustrations of the finished kites throughout the book. In each case, the points at which the bridle is attached will be given together with proper lengths and the point on the bridle to which the flying string is fastened. As the bridle often means the difference between successful flying and complete failure, great care must be taken to attach and adjust it properly. See that the flying string is attached to the bridle exactly in the center of the kite and considerably higher than its center point along its vertical dimension. A beginner in kite construction and flying should experiment by attaching the string at various points on the bridle and thus learn the peculiarities of bridles and flying string attachment points.

FLYING YOUR KITE

Nothing can teach the art of kite flying half as well as experience. While whole books may be written on the subject, a few afternoons with your kite in the field will aid you more than the mastering of a hundred printed pages. It is true, however, that there are certain conditions and methods that every kite enthusiast should recognize and master before attempting his first kite flight.

Land and air conditions are the two most important essentials for successful kite flying. Choose as large a field as possible for flying your kite. Try to find one that is flat so that the air currents will be regular. At the same time, one should be chosen having few surrounding obstacles on or around it, such as overhead wires, buildings, trees, hills, etc. Any of these may cause trouble to the kite flier. The second important essential—air conditions—must not be overlooked. One must have a wind to fly a kite. The best possible flying weather is a clear day with a steady breeze. It should not be a blustery wind, nor one that blows one minute only to die away the next. Keep in mind the fact that a heavy kite will usually stand a stronger wind. Light kites will fly best in light breezes. If a strong wind prevails, it can often be offset by adding more tail to your kite.

Some small kites can be launched by one person, but the best method is to have a friend act as "starter". With a plane surface kite, have the starter hold its end so that it may be easily released when ready to launch. Have it held facing into the wind. Unwind the tail and lay it out on the ground so that it cannot become tangled when the kite rises. Slowly walk away from your starter and unwind the flying string as you go until about a hundred feet away. Hold the line taut until you feel the strength of the wind full on the face of the kite. At a given signal, your starter releases the kite and at the same time you run away from him into the wind. Unwind the flying string as you run. If the kite rises, play out the string as far as possible but keep it taut. If the kite dives, falls, or gets into other aerial trouble, play out the string and allow it plenty of freedom. After it straightens out, the surplus line may be pulled taut again and rewound on your reel or stick. When retrieving your kite, slowly wind it in until within a few feet of the ground. The string is then quickly played out and the kite allowed to settle gently on the ground. Do not pull your kite across the ground, but go to where it is and pick it up. Always examine your kite for damage before and after each flight. Fair sailing to you!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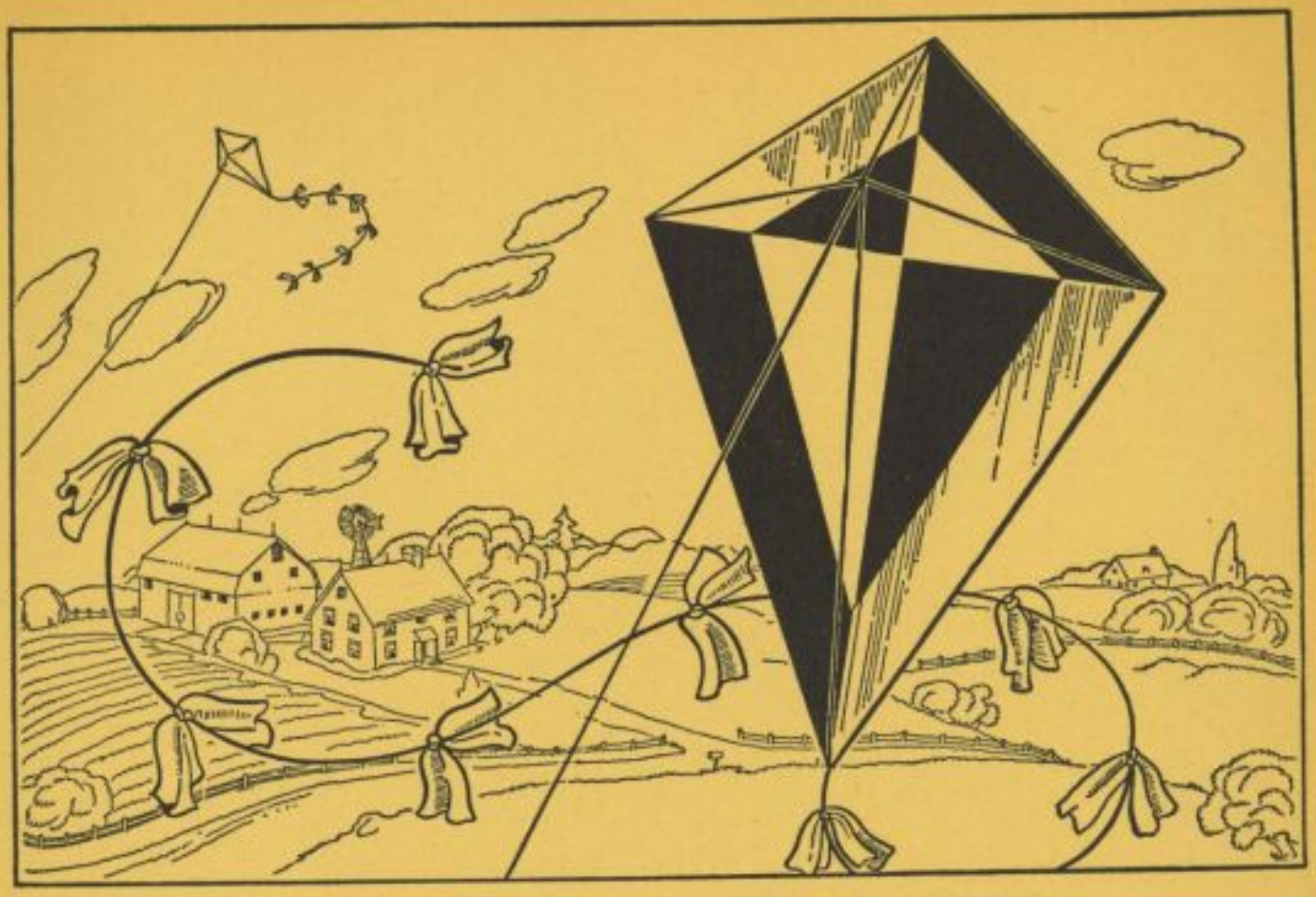


Two-Stick Kite

Frame Sticks The spine stick "C-D" is cut ¼" x ¼" x 34" long. The cross stick "A-B" is cut ¼" x ¼" x 24" long. Sandpaper both to exact size and give each the balance test. (See Page 4 "Frame Sticks").

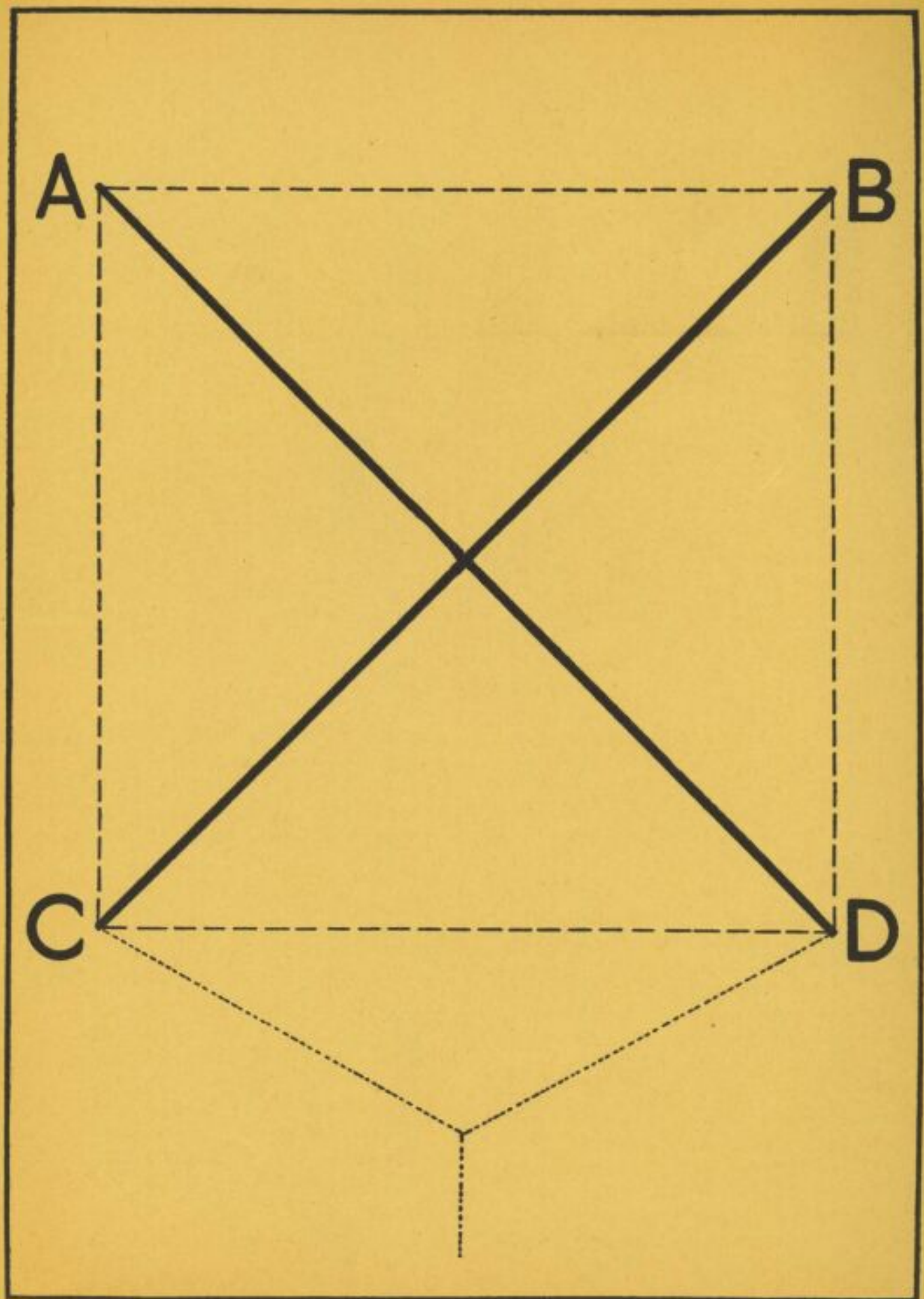
Joint The halved joint or the more simple crossed-and-lashed joint may be used to join these two sticks. (See Page 4 "Joints"). Stick "A-B" crosses stick "C-D" 8½" from end "C", so if the halved joint is used the notch must be cut at this point on stick "C-D", while the notch in "A-B" is cut in its exact center. The sticks are then bound and glued together at right angles to each other. (See Page 4 "Joints").

Outline String Attachment Slit or notch both ends of each stick to hold the outline string. (See Page 5 "Outline String Attachments"). Start the string at end "D" and run it through "A", "C", "B" and then back to "D", where it is tied in place. The outline string is shown by the heavy dotted lines. Wrap the string taut but not tightly enough to bend the sticks or strain them. (See Page 5 "Outline String Attachments").

Covering The kite is now covered with paper. (See Page 6 "Covering"). Place the frame on the paper with its spine down. Turn a 1" hem over the string outlines and glue it firmly in place. Allow the glue to dry thoroughly.

Bridle This consists of two strings. One is cut as long as the distance A-C-D and is attached at points "A" and "B". The other is attached at points "C" and "D". It is cut long enough to reach the peak of the first string over the joint of the two sticks, where the flying string is fastened. (See Page 7 "Bridles").

Tail Attach an eighteen-foot tail of rags or paper bows to point "D". (See Page 6 "Kite Tails").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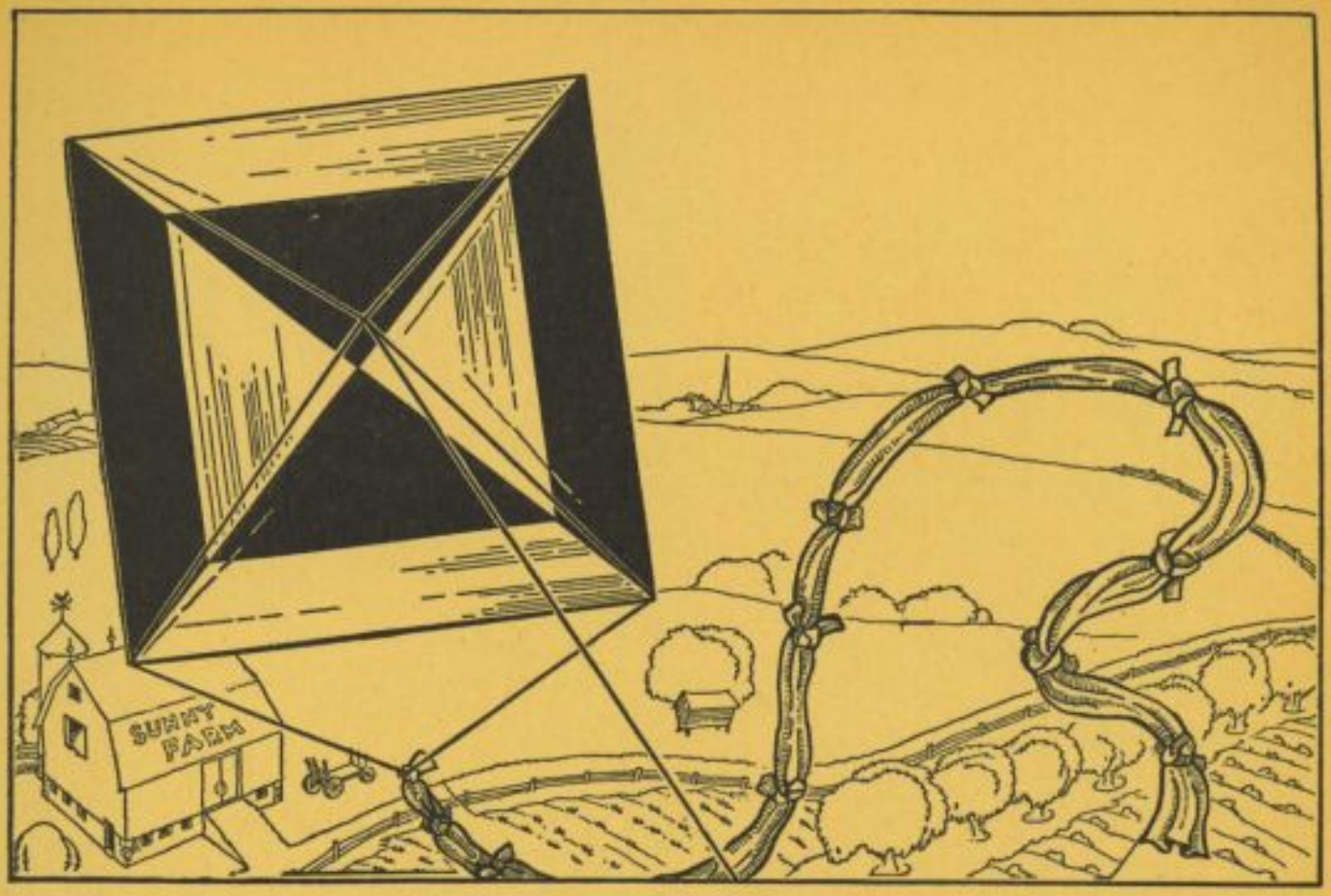


Square Kite

Frame Sticks Cut two duplicate sticks ¼″ x ¼″ x 34″ long, which will make a 28″ square kite. This size may be increased or decreased as you wish. Sandpaper both sticks to exact size and give each the balance test. (See Page 4 "Frame Sticks").

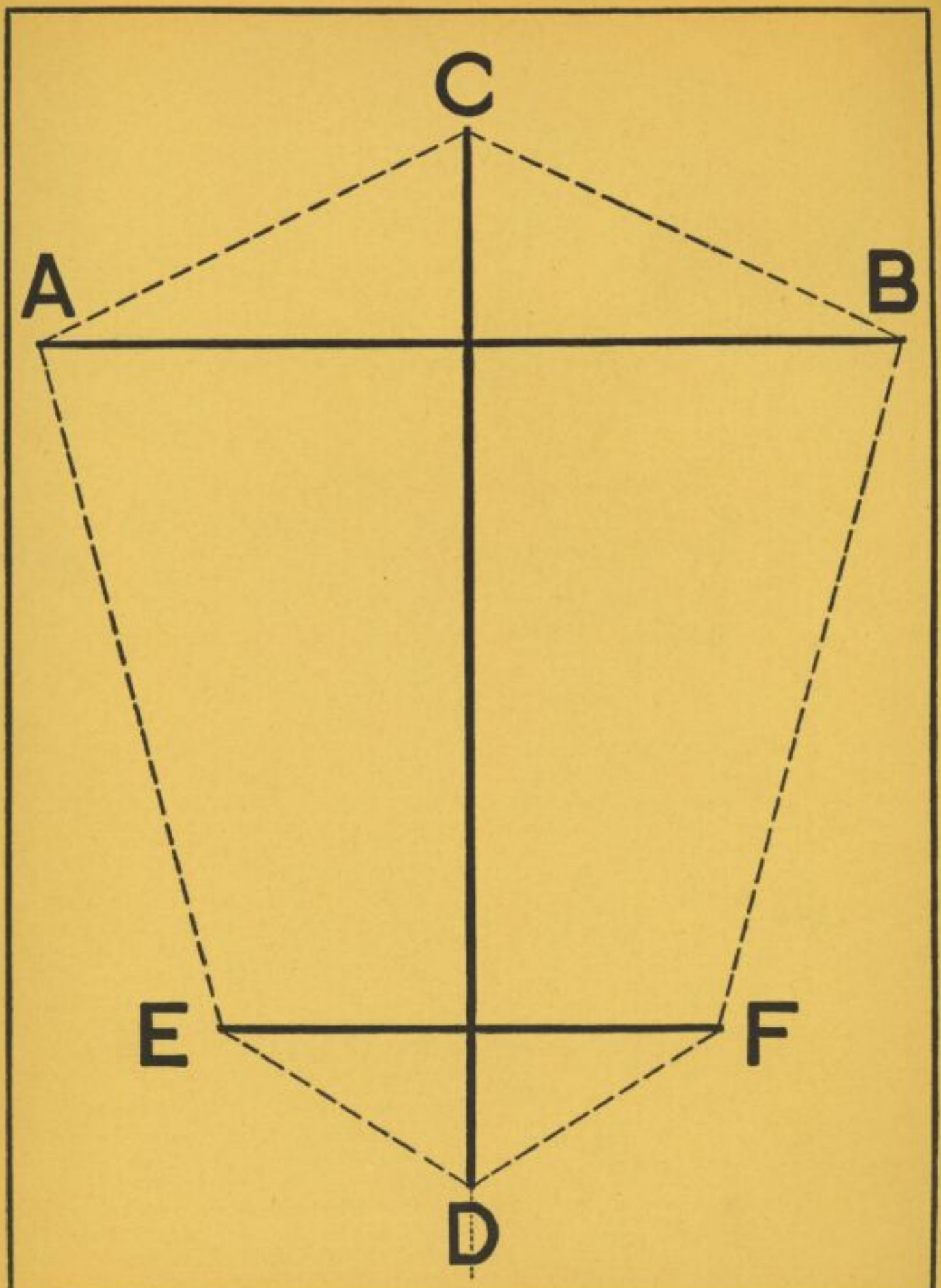
Joint Either the crossed-and-lashed or the halved joint may be used for this kite. The sticks cross each other exactly in their centers, where they are glued and lashed at right angles. (See Page 4 "Joints").

Outline String Attachment Slit the four ends of the sticks for the string outline, which is shown on the opposite page by dotted lines. Start the string at "C" and pass it through points "A", "B", "D" and back to "C". Wrap it around the end of each stick in the process. (See Page 5 "Outline String Attachments").

Covering Cut a square of covering paper 30″ on each side. Place the kite frame in the center it it, turn over the 1″ hem and glue it securely in place. Fit and glue the paper around the ends of the sticks and allow to dry. (See Page 6 "Covering").

Bridle This is made of two 56″ long strings, which represent the length C-A-B. One is attached to points "A" and "D", while the other is fastened to points "B" and "C". They are brought together at a point halfway between "A" and "B" and 9″ from the top outline string, where the flying string is attached. (See Page 7 "Bridles").

Tail A heavy tail of rags may be used on the square kite. The paper bow tail can also be used. Both these are explained on Page 6 under "Kite Tails". A single long tail may be used, as shown in the above illustration. It is best fastened to a single string attached to point "C" and "D", as shown by the fine dotted lines.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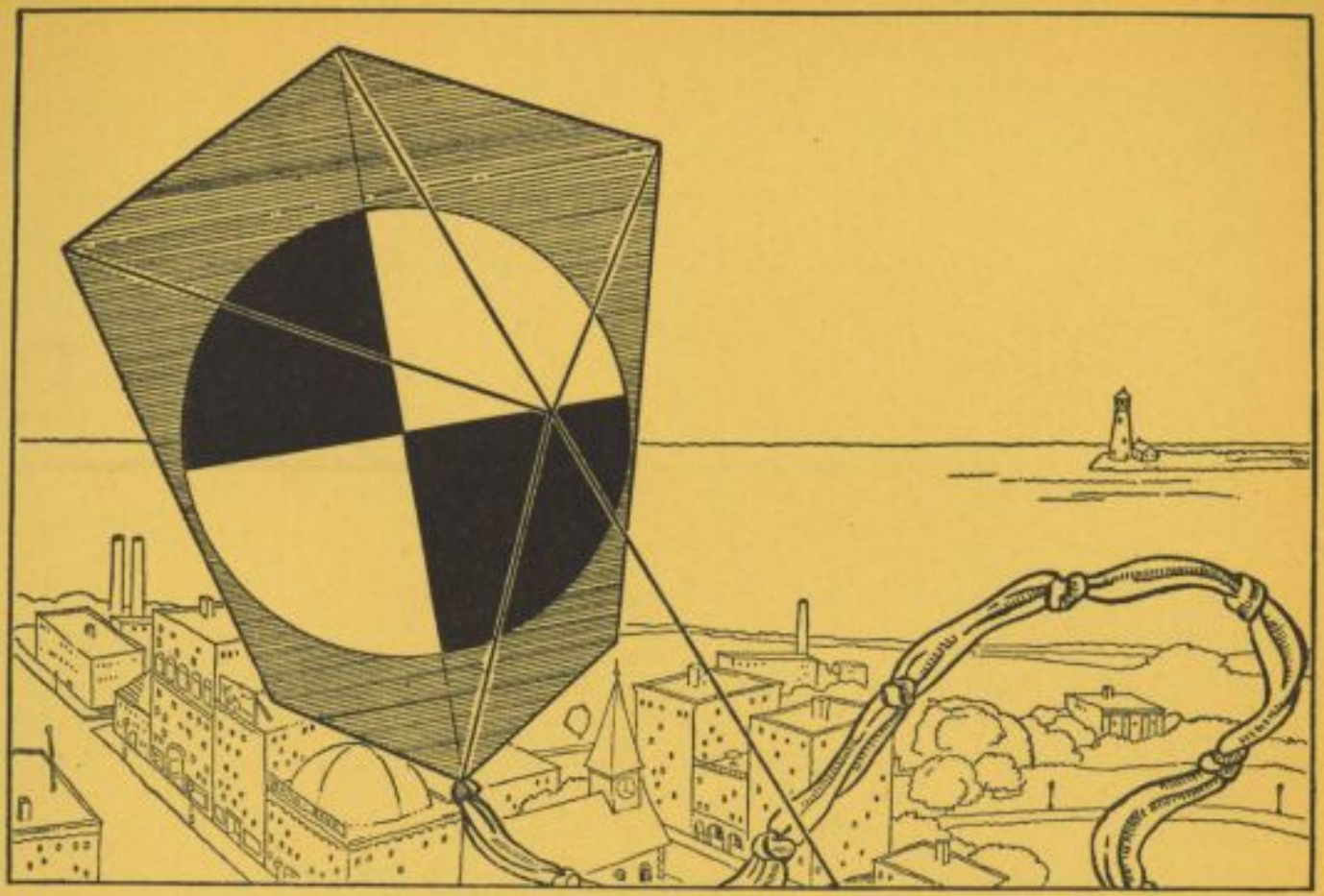


Three-Stick Kite

Frame Sticks The spine stick "C-D" is cut ¼" x ¼" x 34" long. Stick "A-B" is ¼" x ¼" x 28" long, while stick "E-F" is ¼" x ¼" x 16" long. Sandpaper to size and give each one the usual balance test. (See Page 4 "Frame Sticks").

Joints The two sticks "A-B" and "E-F" join "C-D" by either the crossed-and-lashed or halved joint. "A-B" crosses "C-D" 7" from point "C", while "E-F" crosses it 5" from point "D". Glue and lash these joints. See that the two cross sticks are parallel to each other and at right angles to "C-D". (See Page 4 "Joints").

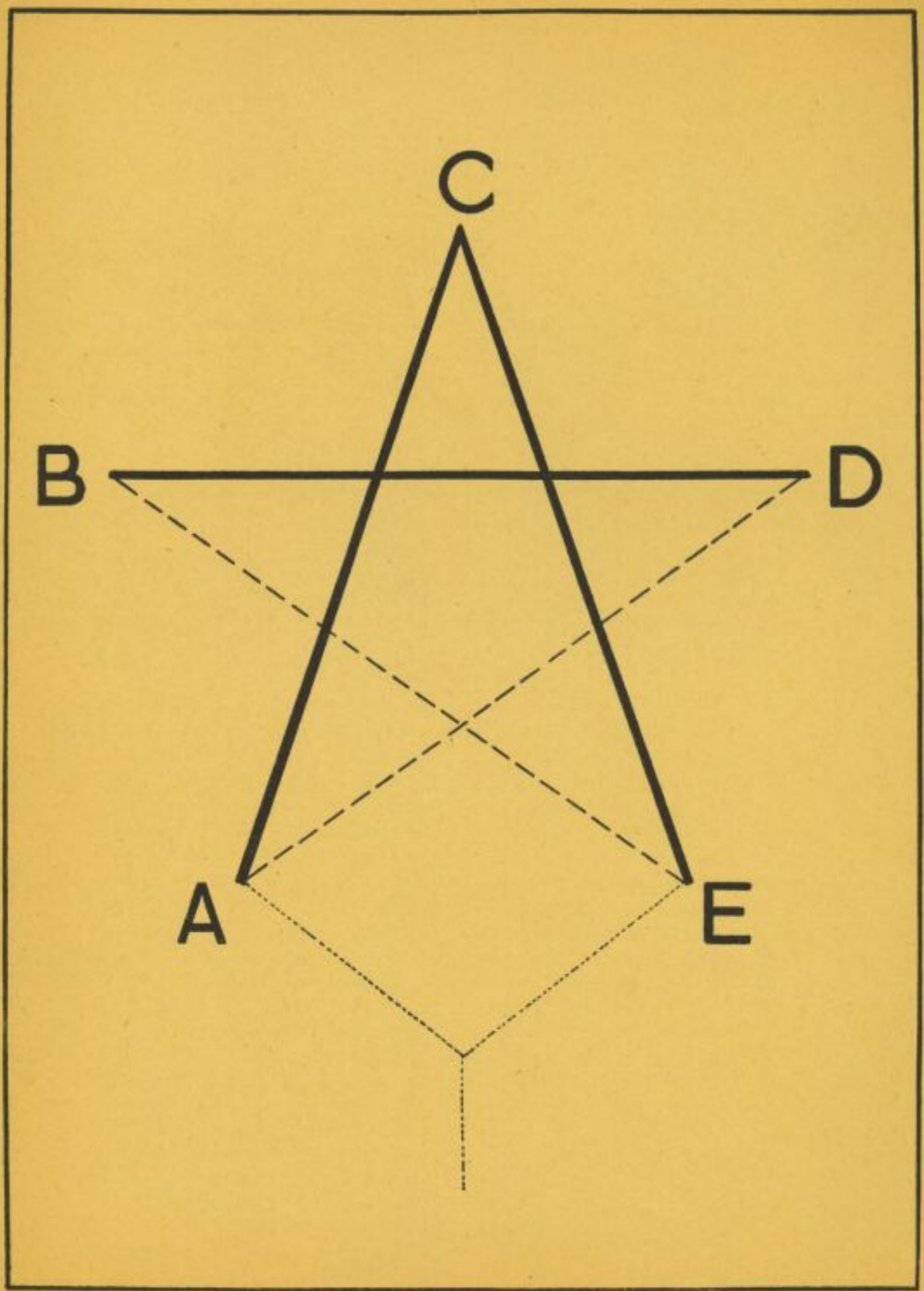
Outline String Attachment Slit or notch the six ends of the sticks. Start the outline string at point "D" and carry it through "E", "A", "C", "B", "F" and back to "D", where it is tied. This is shown by the heavy dotted lines on the opposite plan. (See Page 5 "Outline String Attachments").

Covering Cut the paper to size, lay the frame on it with the spine "C-D"down, turn over a 1" hem on all outline strings and glue it firmly in place. Allow it to dry thoroughly. (See Page 6 "Covering").

Bridle The bridle is of two strings. One extends from point "A" to point "B" and is 38" long. The other extends from point "C" to point "D" and is 46" long. They are joined at a point about 12" below "C" and halfway between "A" and "B". (See Page 7 "Bridles"). Tie the flying string at this point of intersection.

Tail A tail of knotted rags or the usual paper or cloth bow tail is used on this kite. It is attached at point "D", as shown in the above illustration. (See Page 6 "Kite Tails").

Painting Paint the paper on the opposite side from the frame sticks with water colors or tempera paints. Any desired design may be used.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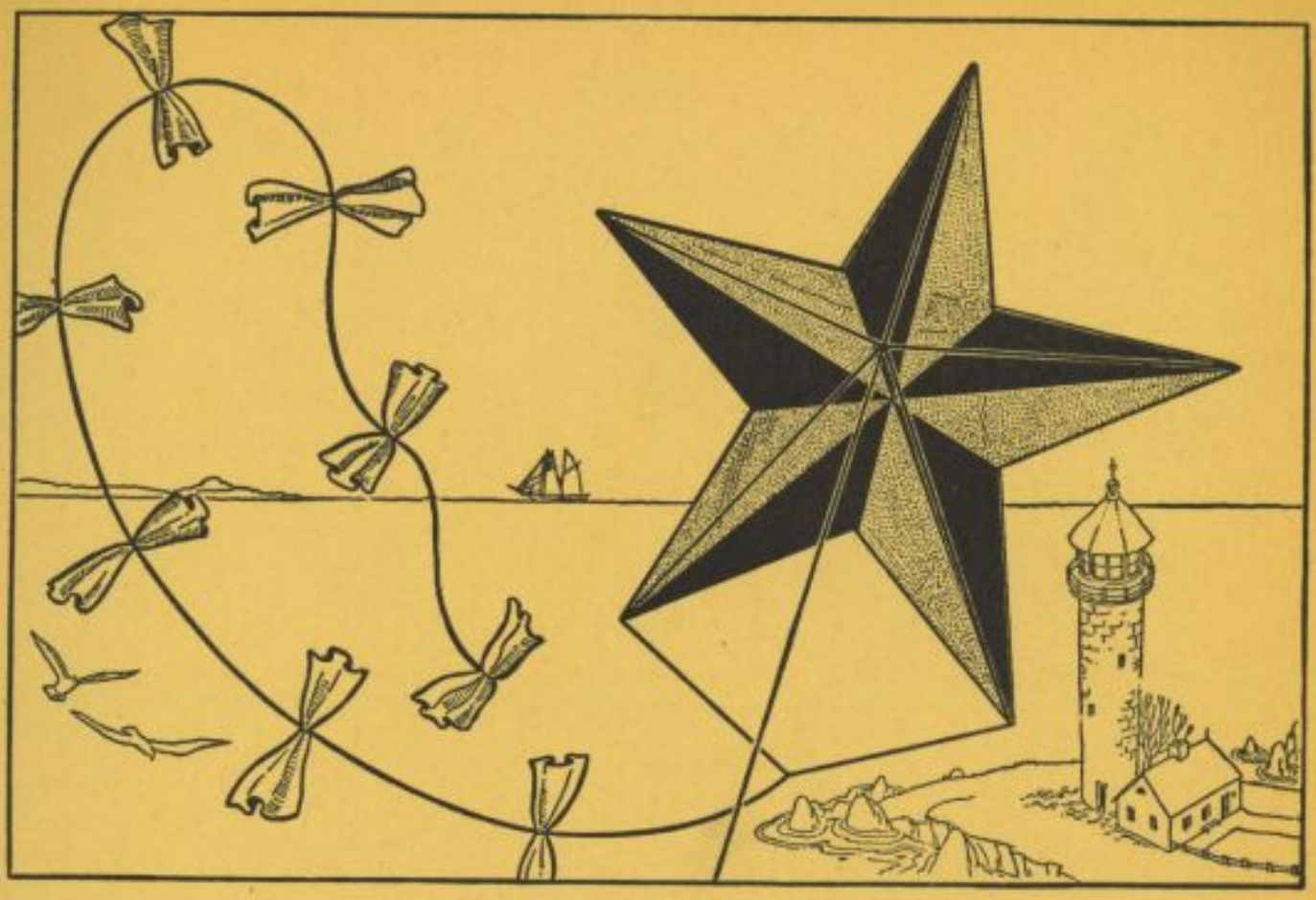


Star Kite

Frame Sticks This kite is laid out on a 24″ diameter circle. It can be made twice as large by doubling the lengths of the sticks. Cut three duplicate sticks ¼″ x ¼″ x 23″ long. Sandpaper each to exact size and give the balance test. (See Page 4 "Frame Sticks").

Joints The common crossed-and-lashed joint is recommended for the *Star Kite*. Bevel one end of each of two sticks and glue and lash them together, as shown at "C". Spread their other ends "A" and "E" 14½″ apart. Stick "B-D" crosses sticks "A-C" and "E-C" 8½″ from their joined ends "C". See that "B-D" extends out an equal distance from each of these sticks. Glue and lash them in this position. Test points "A", "B", "C", "D", and "E" to see that they are an equal distance apart. (See Page 4 "Joints").

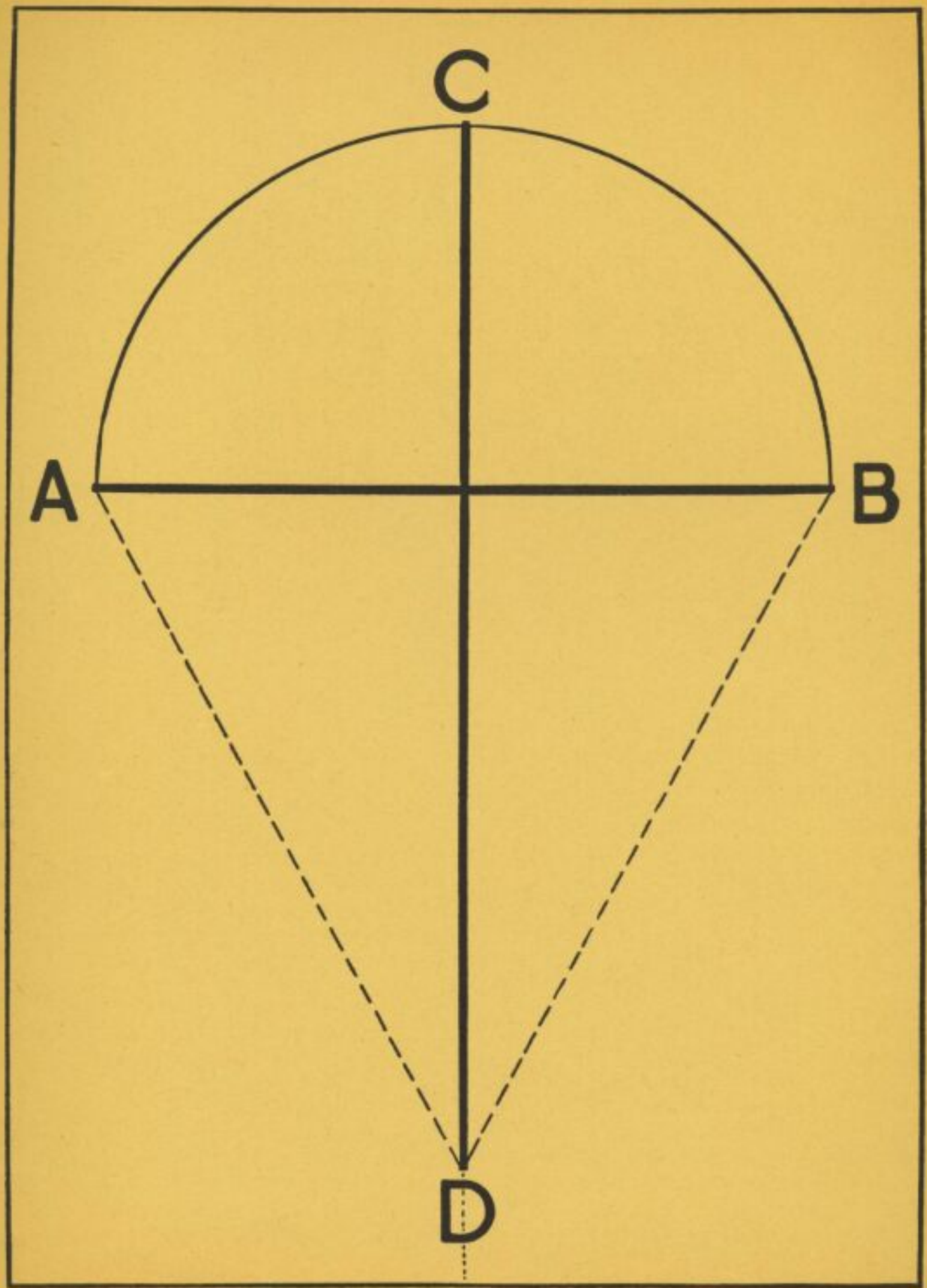
Outline String Attachment Slit or notch the ends of the sticks at points "A", "B", "D" and "E". Run a string from "A" to "D" and another from "E" to "B", as shown. (See Page 5 "Outline String Attachments").

Covering Cut a 24″ diameter circle of the paper with which you wish to cover your kite. Place the frame on the paper and cut to shape with a 1″ hem all around. Turn the paper over the outline strings and the sticks and glue it securely in place. Allow to dry. (See Page 6 "Covering").

Bridle Three strings are used for this bridle. One is fastened to point "C". The second extends from point "B" to point "E", while the third goes from "A" to "D". All strings must be long enough to join each other a distance of 6″ above the face of the kite, and in the center over stick "B-D", as shown. (See Page 7 "Bridles").

Tail A paper bow tail is fastened from a bridle attached to points "A" and "E". (See Page 6 "Kite Tails").

Painting Paint as shown in the illustration with contrasting colors. (See Page 4 "Paint").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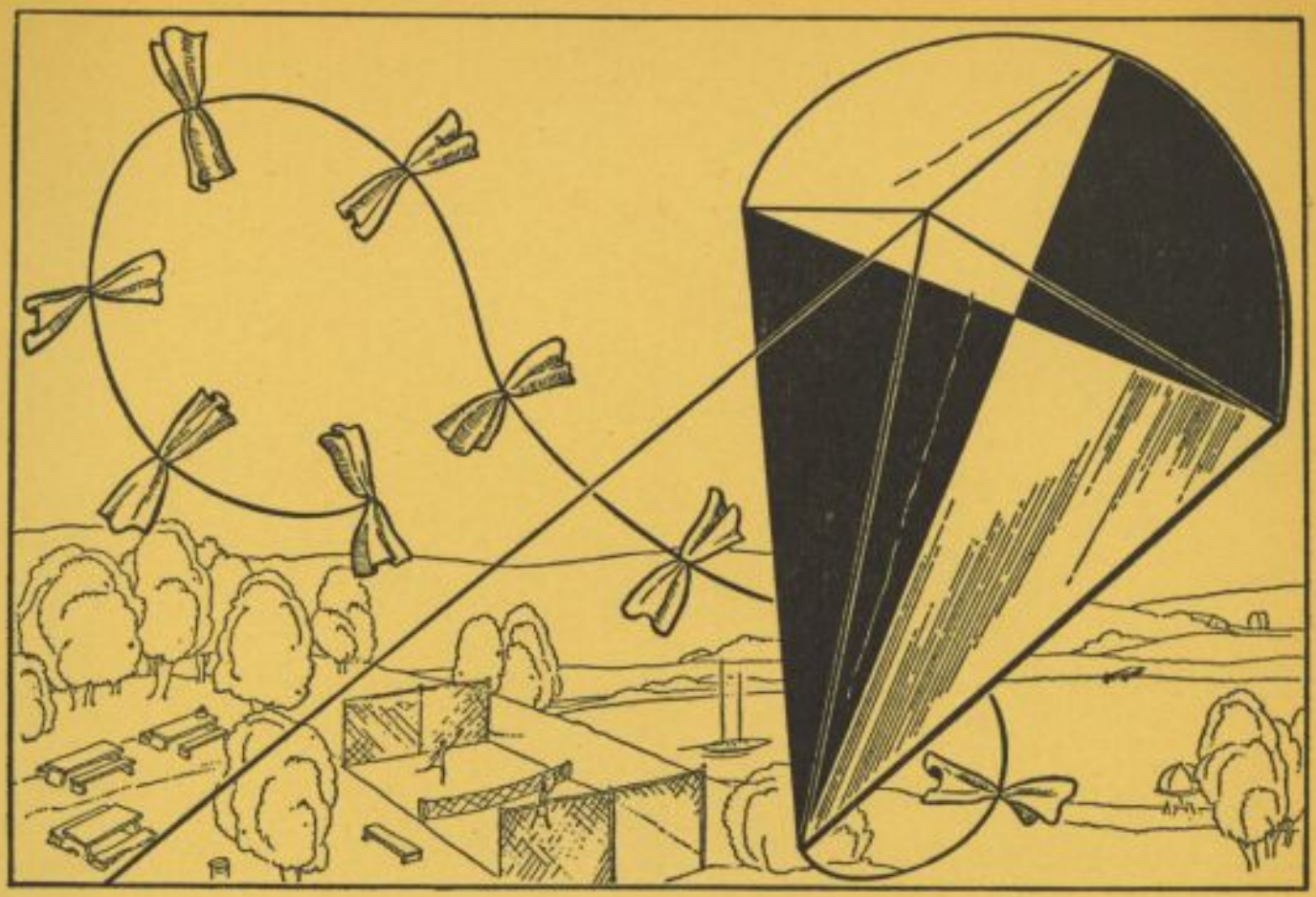


Bow Kite

Frame Sticks This requires two straight sticks and a bent one. The spine "C-D" is cut ¼″ x ¼″ x 34″ long, while the cross stick "A-B" is cut ¼″ x ¼″ x 24″ long. The bent stick "A-C-B" is of ⅛″ x ⅛″ x 38″ long, or it may be bent from split bamboo of ⅛″ x ¼″ size. Some eliminate the cross stick "A-B" and replace it with a string, but the stick is recommended for beginners. Finish both straight sticks with sandpaper and give each the balance test. (See Page 4 "Frame Stick"). Slit points "A", "D" and "B" on these sticks. Bend sticks "A-C-B" to a 12″ radius. (See Page 5 "Bending Wood"). Tie a string across its ends until dry.

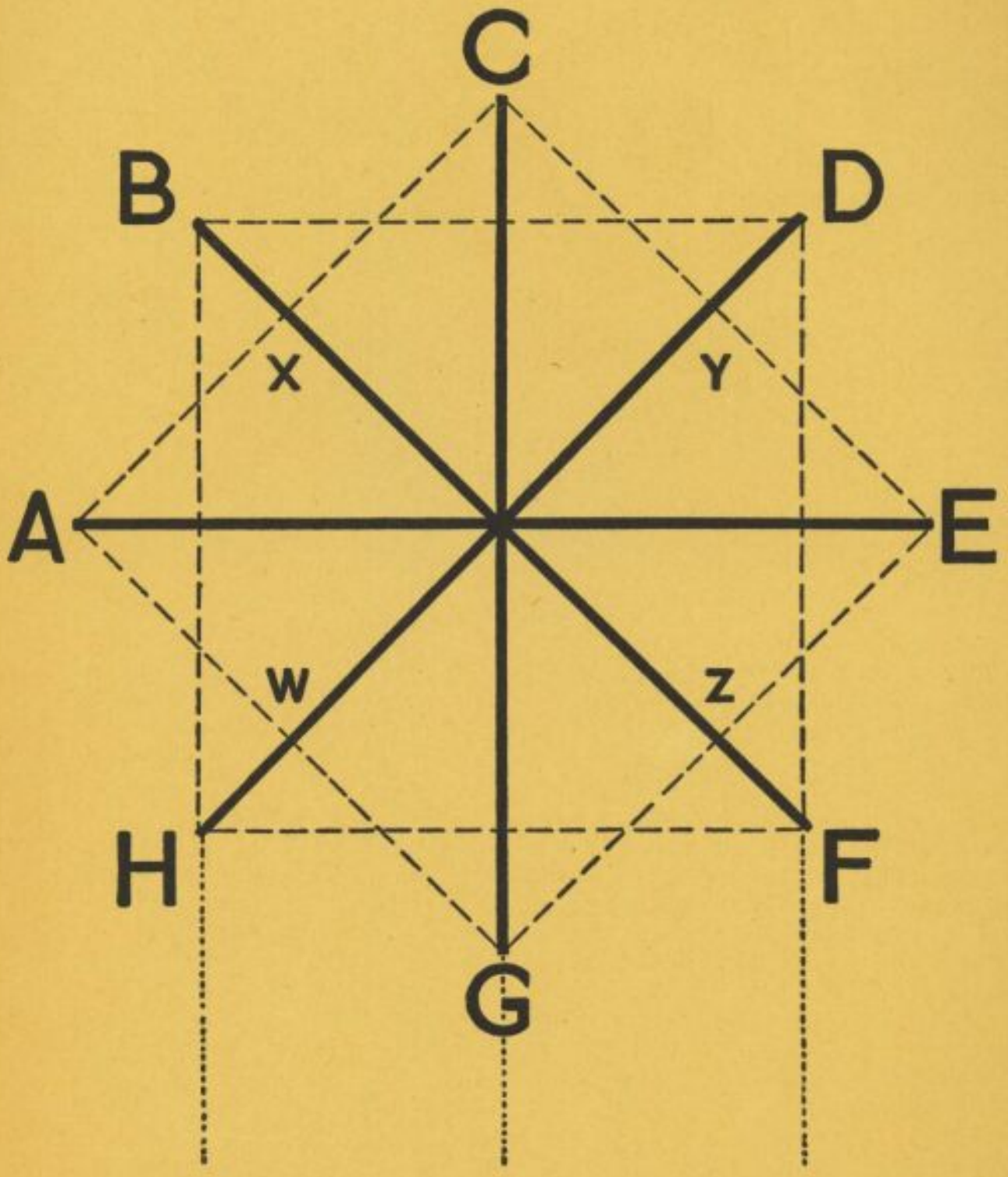
Joints Glue and lash "A-B" across "C-D" 12″ from point "C". See that these sticks are at right angles to each other. Glue and lash the curved stick "A-C-B" to points "A", "C", and "B", as shown. (See Page 4 "Joints" and Page 6 "Splicing and Joining Bamboo").

Outline String Attachment A single outline string is used to frame the kite between points "A" and "D" and "B", as shown by the dotted lines. (See Page 5 "Outline String Attachments"). Start the string at point "A". Bring it down to "D" and then up to "B".

Covering Place the frame spine down on the paper, cut to size leaving a 1″ hem all around, and then turn the hem over on the strings and bent stick and glue in place. (See Page 6 "Covering").

Bridle Two strings are used for this bridle. One is as long as "A-C-B" stick and is attached at points "A" and "B". The other is fastened to "D" and "C", cut long enough to reach the apex of the first one. The string for flying is attached 6″ below "C" and directly over stick "C-D". (See Page 7 "Bridles").

Tail Use the same tail as on the two-stick kite. (See Page 9).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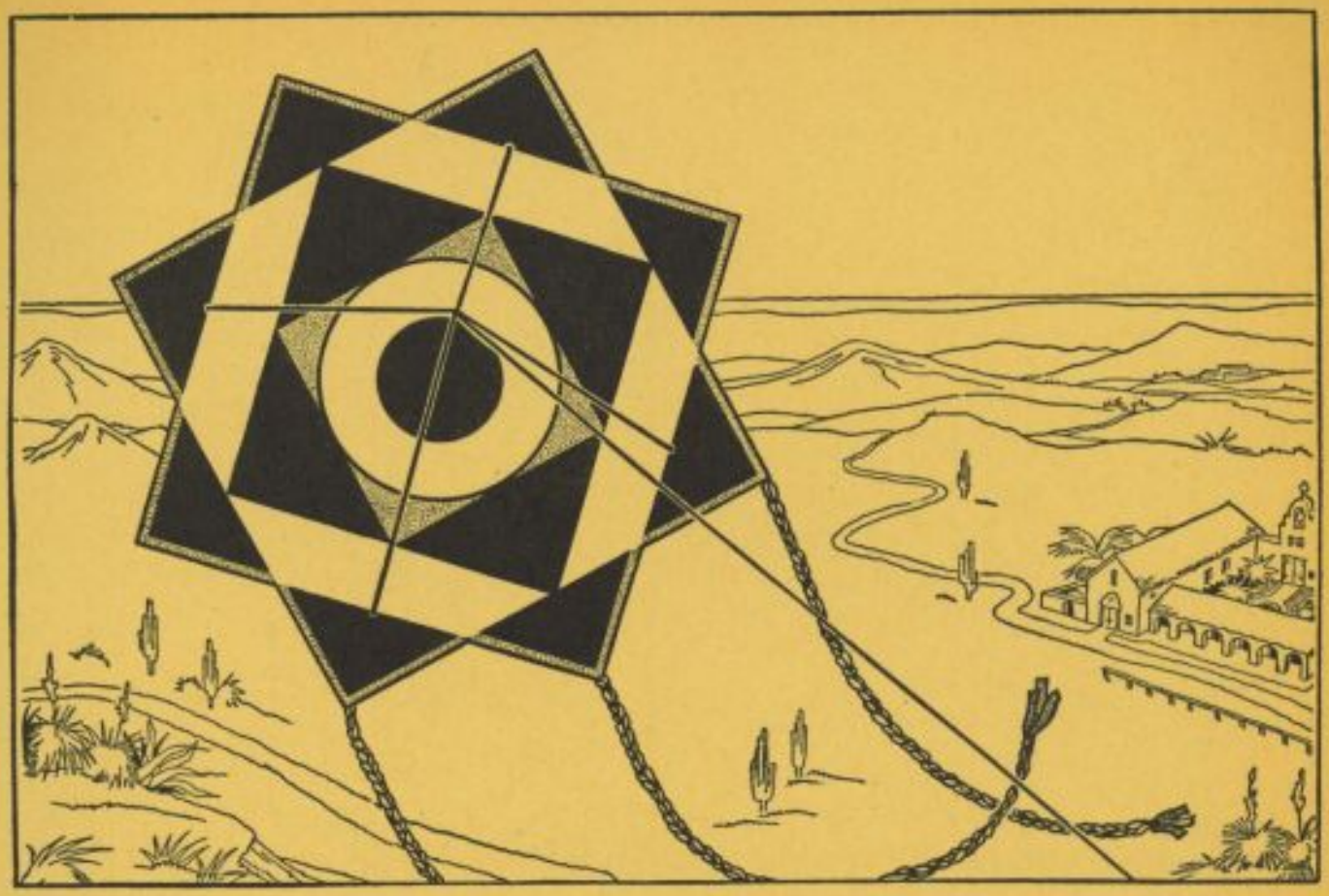


Eight-Point Star Kite

Frame Sticks Plane and sandpaper four sticks to measure ¼″ x ¼″ x 24″ long. Give each one the balance test. (See Page 4 "Frame Sticks").

Joints As four sticks cross each other all at one point, the halved joint should be used to join units of two sticks each. Stick "A-E" crosses "C-G" at right angles and should be joined with the halved joint. Stick "B-F" crosses "H-D" at right angles and is joined with the same process. These two units are then joined with the crossed-and-lashed joint. Test to see that point "B" is halfway between "A" and "C", and point "D" is halfway between "C" and "E", etc. Make sure that all sticks are joined exactly in their centers. (See Page 4 "Joints").

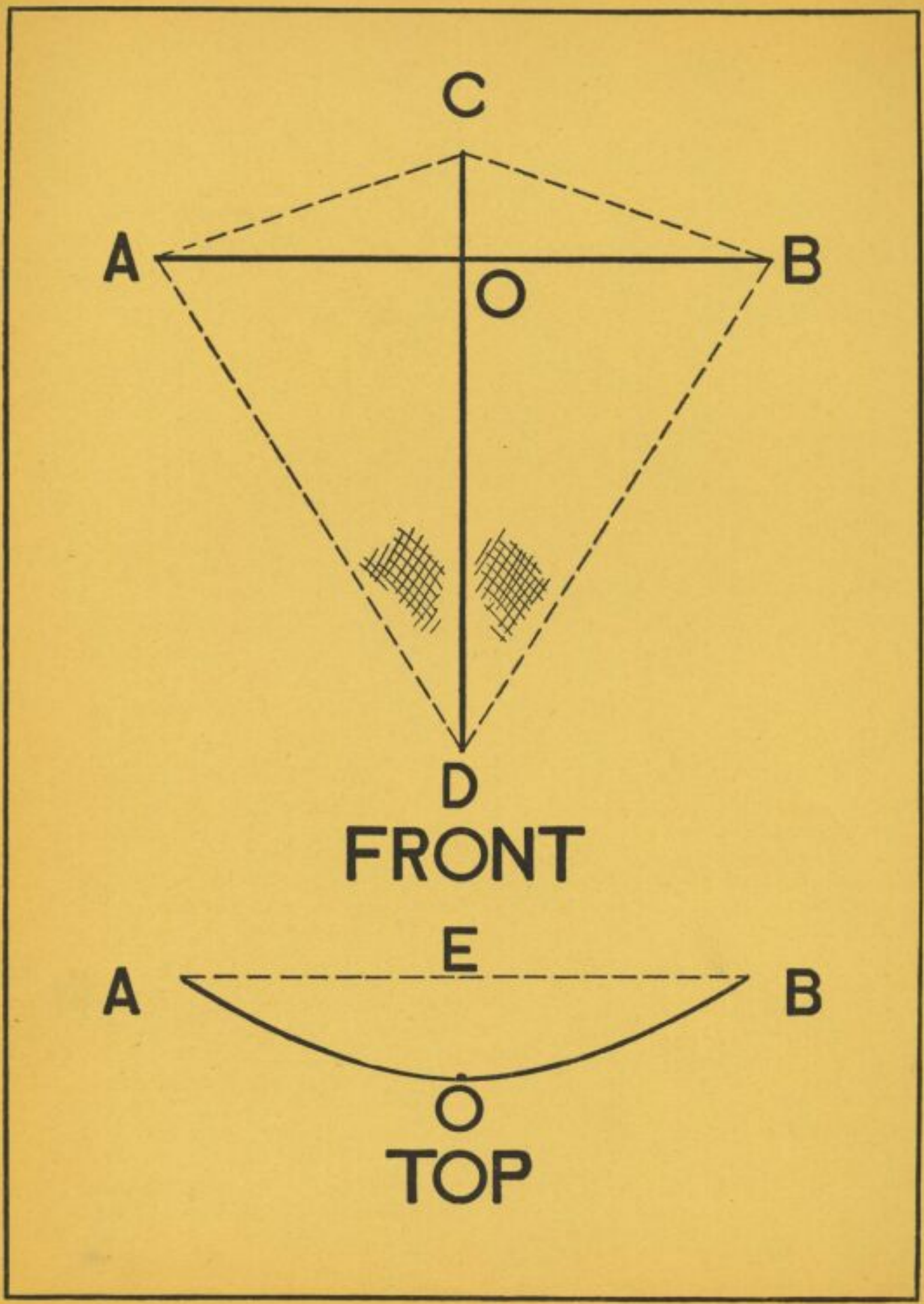
Outline String Attachments Two outline strings are used. One extends from "A" to "C" to "E" to "G" and back to "A". The second one starts at "B" and extends to "D" to "F" to "H" and back to "B", as shown on the opposite pattern. (See Page 5 "Outline String Attachments").

Covering Cut a 24″ square of the covering paper. Place the frame on it and cut its form, following the outline strings. Allow for a 1″ hem all around, which is then turned over the string and glued in place. (See Page 6 "Covering").

Bridle The bridle is made with two strings. One is attached at points "X" and "Z", while the other is fastened to points "W" and "Y". They should be long enough to reach a point 8″ from the surface of the kite. Make the bridle strings meet over stick "C-G" and slightly above stick "A-E". The flying string is attached at this point.

Tail This consists of three woven rag streamers attached to points "H", "G" and "F". (See Page 6 "Kite Tails").

Painting Lay out the triangles, as shown in the above illustration and fill them in with contrasting colors. (See Page 4 "Paint").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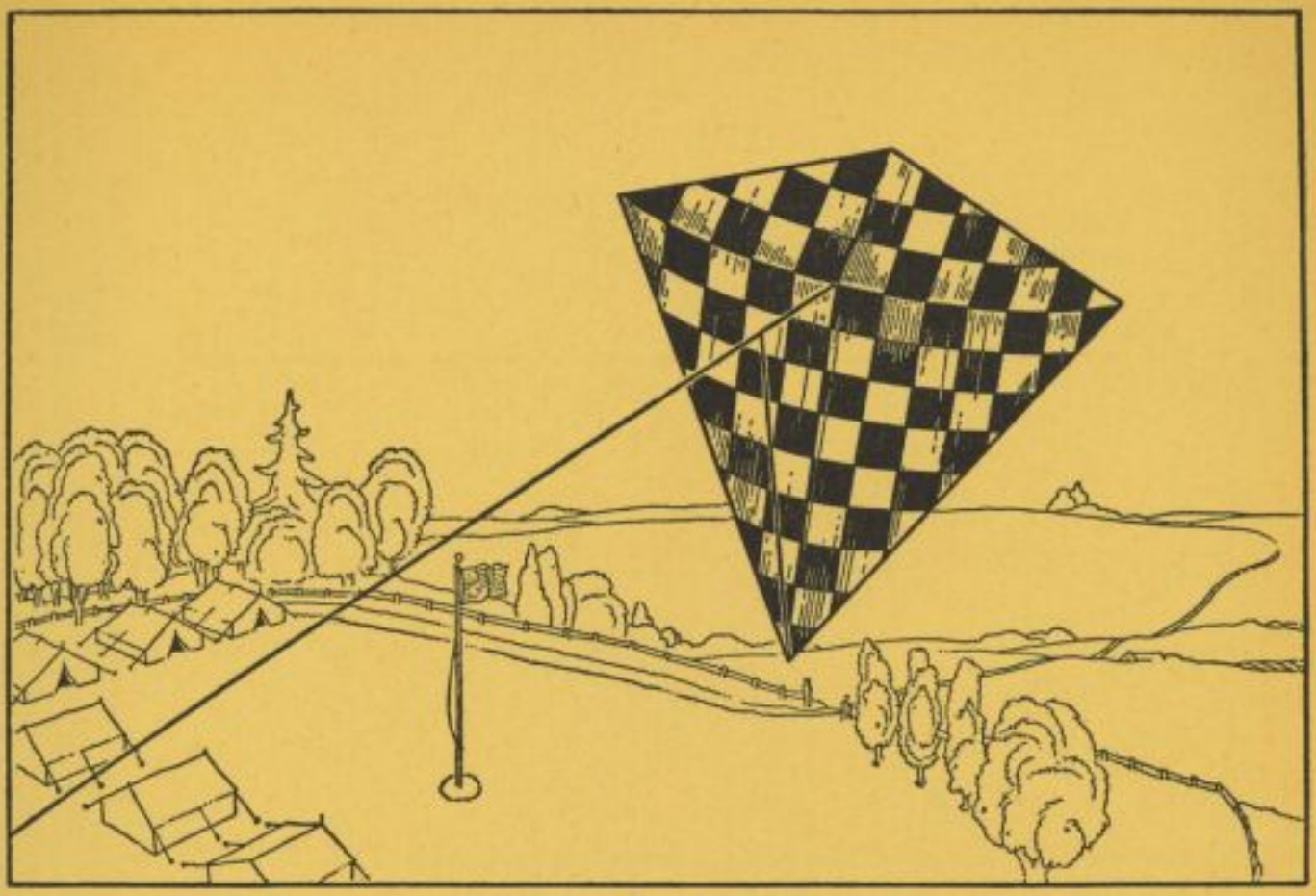


Eddy Kite

Frame Sticks This kite is made with two sticks of equal lengths. Cut and sandpaper them to measure ¼" x ¼" x 25" long. (See Page 4 "Frame Sticks"). Bend the cross stick "A-B", as shown in the top view. The distance between the point "E" and the point "O" must be 4½". Tie a bow string at each end, as shown by the dotted line. (See Page 5 "Bending Wood").

Joint Stick "A-B" crosses stick "C-D" 4½" from point "C". Locate its exact center on "C-D" and glue and lash it to this spine stick. Note that "C-D" is inside the bend of "A-B". (See Page 4 "Joints").

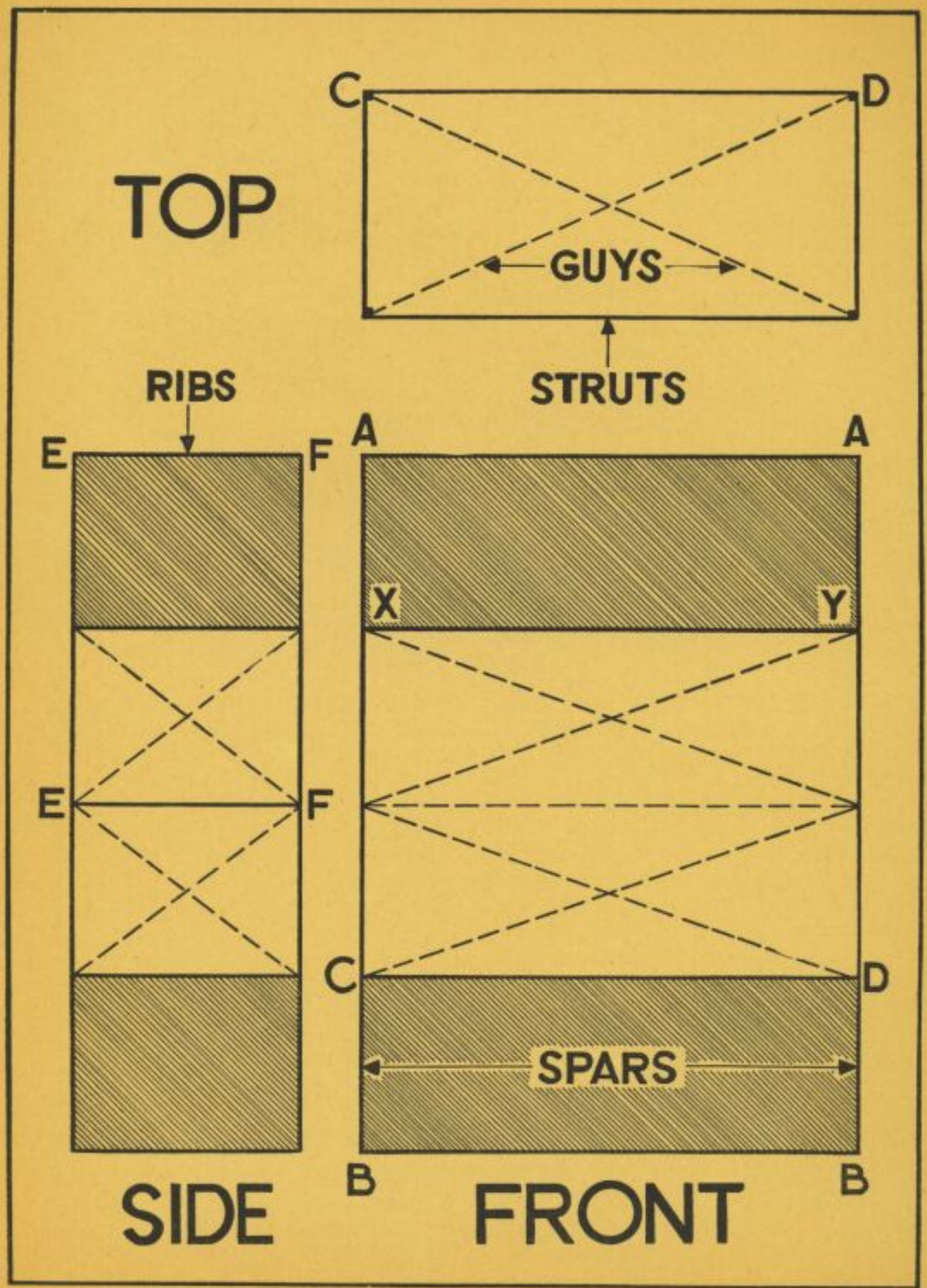
Outline String Attachment Slit points "A", "C", "B", and "D" for the outline string. Start the string at "D" and carry it through "A", "C", "B" and back to "D". (See Page 5 "Outline String Attachments").

Covering Place the frame spine down on the paper. Cut the covering paper 1" larger all around. At the same time, allow for a slight looseness at the parts shown by shading in the opposite plan. Roll 3" diameter balls of paper or cloth and place them in position under the paper during covering. Bring the hem around the outline strings and glue it firmly in place. Allow the glue to dry. (See Page 6 "Covering").

Bridle This consists of a single string cut as long as the distance "O-B-D". It has one end attached to point "O", where the two sticks cross, while its other end is fastened to point "D". The flying string is fastened just below point "O". (See Page 7 "Bridles").

Tail Kites of this type do not require tails.

Painting Such a kite may be painted in a number of ways. The checker-board effect shown here is quite effective when done in brightly contrasting colors. (See Page 4 "Paint").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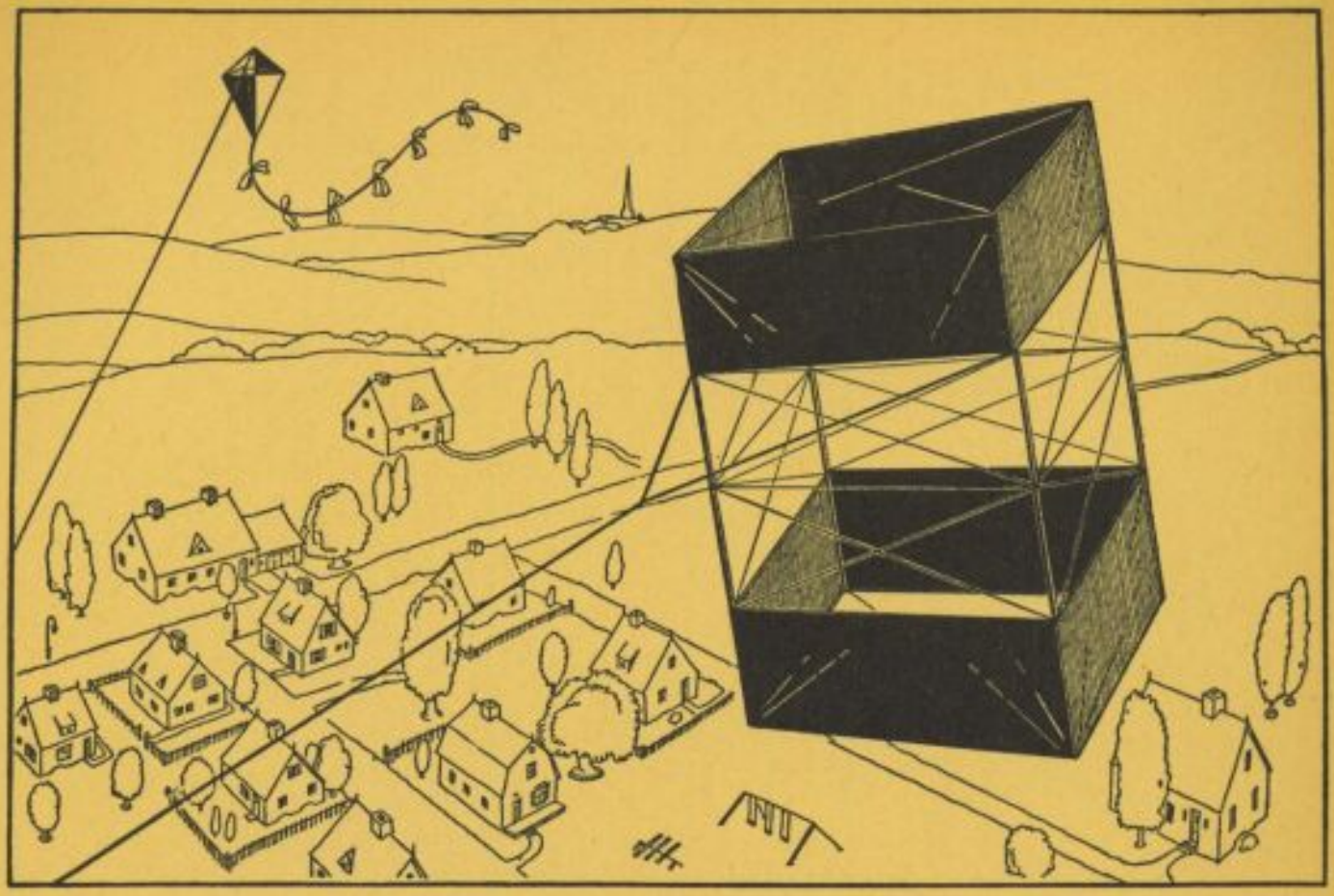


Box Kite

Frame Sticks Cut four spars "A-B" ⅜" x ⅜" x 46" long. Cut eight struts "C-D" the same size and 30" long. Ten short ribs "E-F" are then cut ¼" x ¼" x 15" long. Sandpaper all to exact size and then give each one the balance test. (See Page 4 "Frame Sticks").

Joints Because of the heavy construction of a box kite, all joints are glued and then nailed. (See Page 4 "Nails").

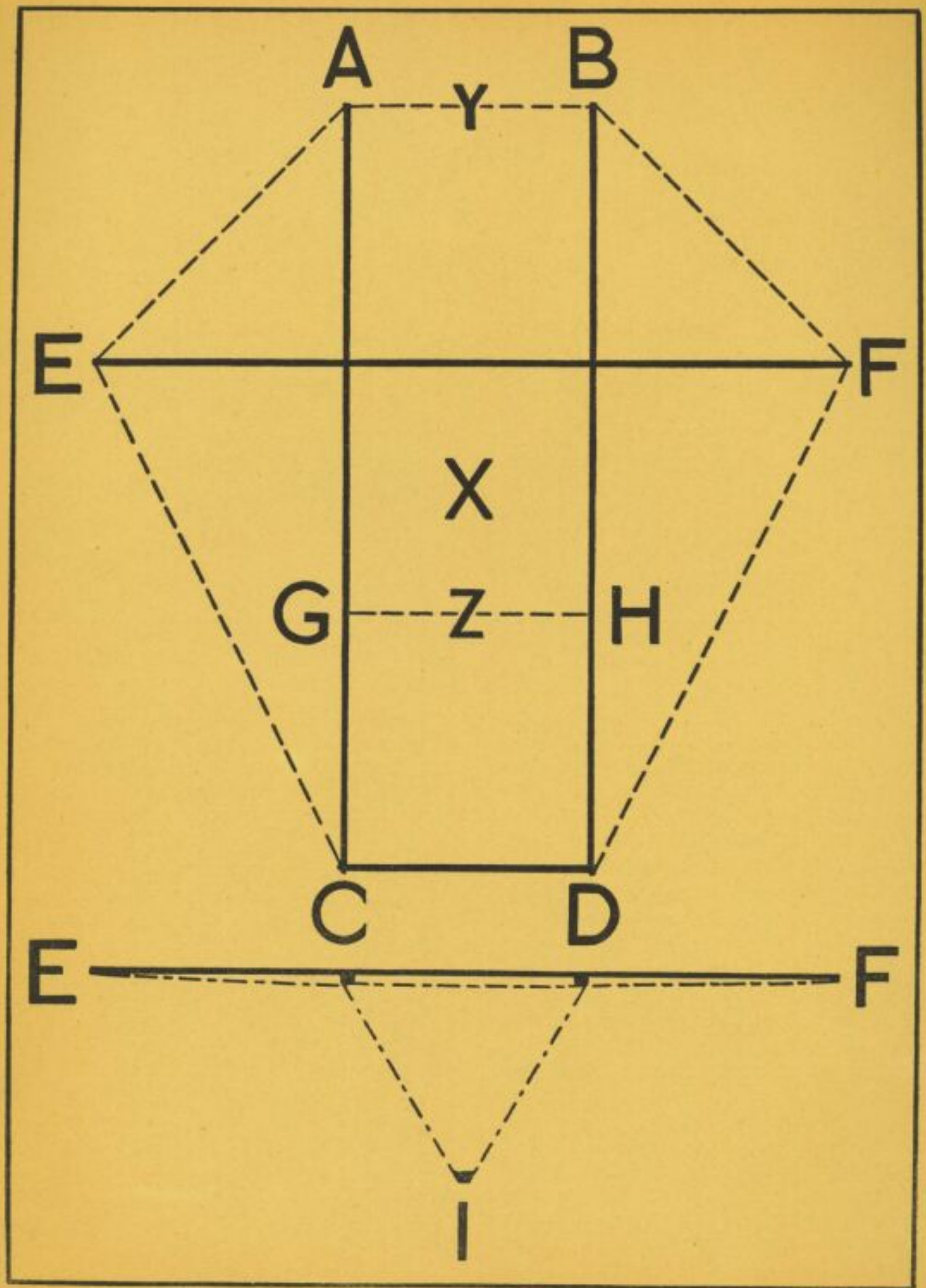
Assembly Assemble one side at a time, as shown in the side view. Lay two spars "A-B" parallel to each other on the floor and 15" apart. Place a rib "E-F" between them at their top and bottom. Place two inner ribs 11½" in from these end ribs, and then place the fifth rib in the center of the spars, as shown in the plan. Glue and nail each of these ribs in place. Note that they divide the lengths of the spars into four equal sections. Allow the glue to dry thoroughly. These two sides are then joined together by four struts "C-D" on each end, as shown. These are glued and nailed in position at the ends of the spars and in line with the first inner ribs, but none are applied to the center, as shown in the front view.

Guys String guy lines are applied, as shown in the plans, to reinforce the structure. Have these taut but not tight enough to pull the frame out of shape.

Covering The end bays, which are shown in the shaded lines, are covered on all sides. Cloth or wrapping paper may be used. Glue the material to the spars, struts and ribs. (See Page 6 "Covering").

Tail No tail is needed on a box kite.

Bridle The bridle is a single string attached to points "X" and "Y", as shown in the front view. It should be long enough to reach 36" from the surface of the kite. The flying line is attached to the center of the bridle. (See Page 7 "Bridles").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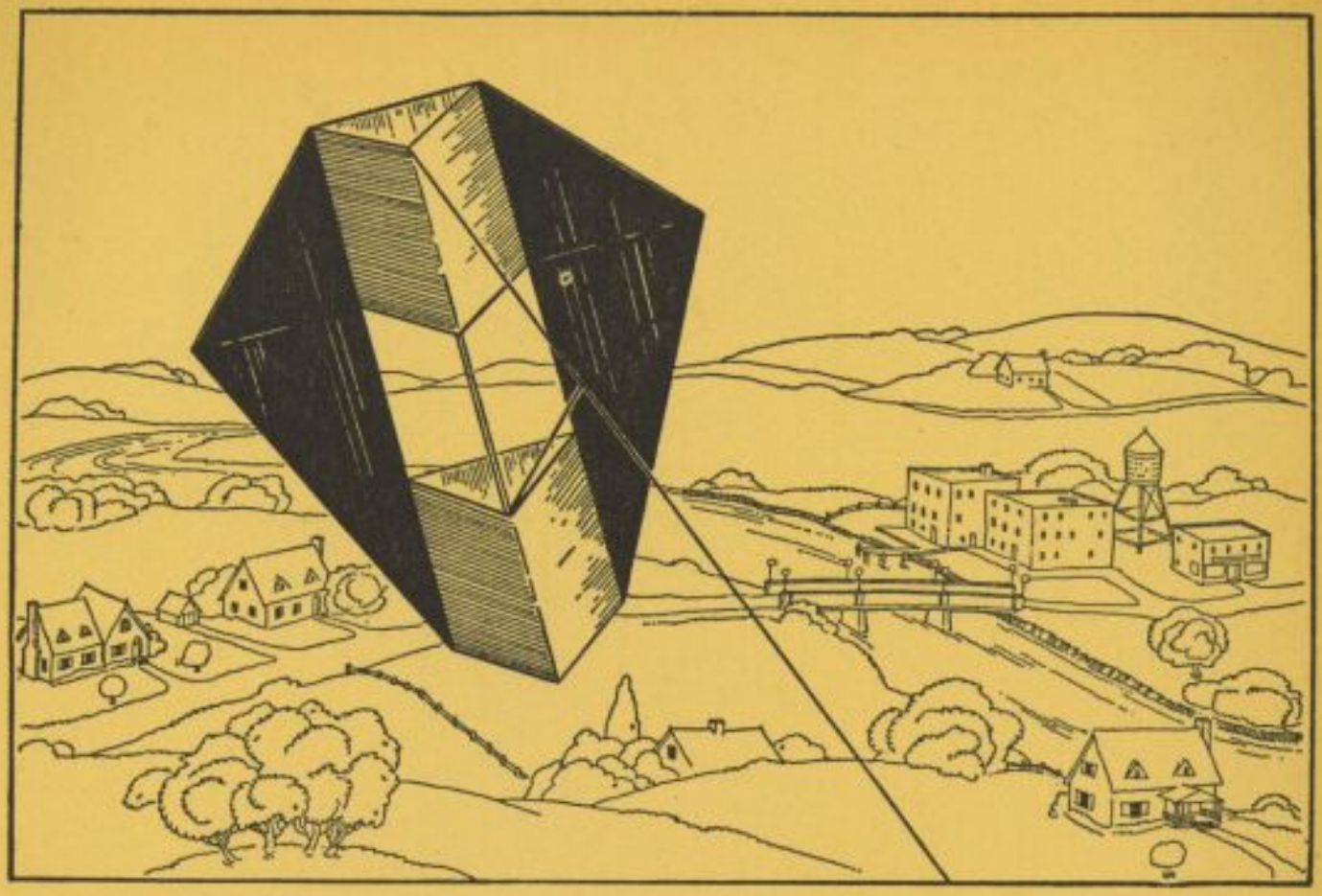


War Kite

Frame Sticks This is often called the "Conyne kite" after its inventor. It is made with five sticks. Four of these are ¼″ x ¼″ x 33″ long, while the fifth is the same size but only 11″ long. Sandpaper to size and give each the balance test. (See Page 4 "Frame Sticks").

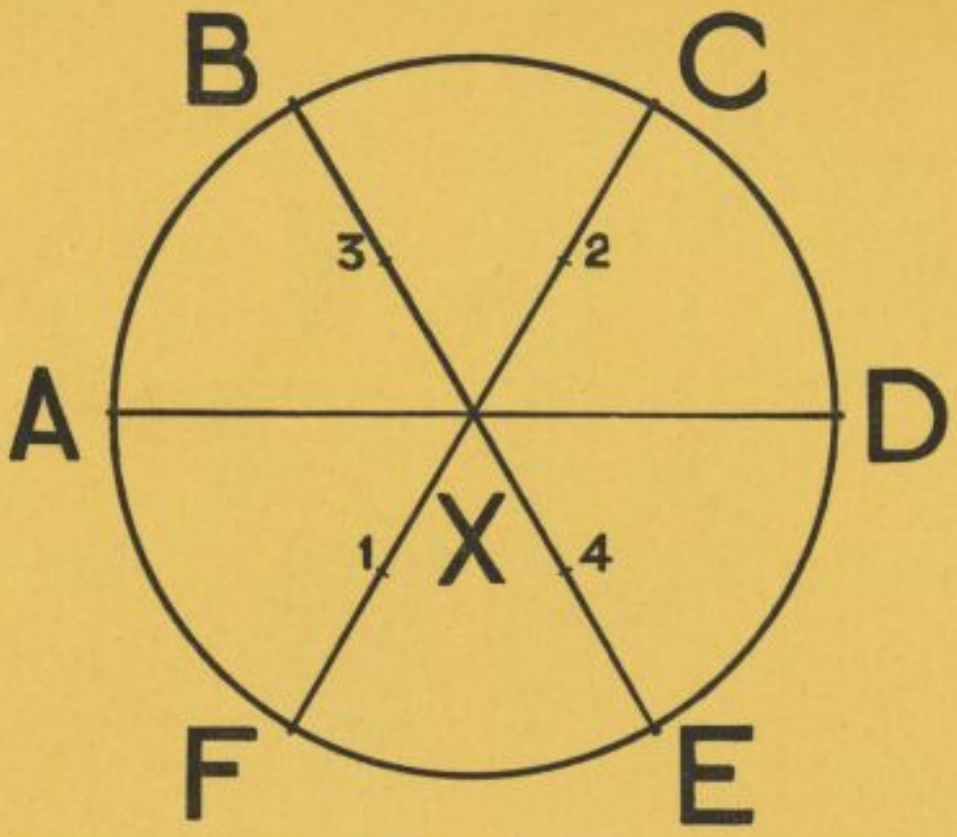
Joints The crossed-and-lashed joint is used for this kite. Divide each of the long sticks into three equal lengths and mark each 11″ point. Lay sticks "A-C" and "B-D" parallel to each other and 11″ apart. Lay "E-F" across these sticks so that the 11″ marks on all three sticks match, as shown in the plan. Glue and lash "E-F" in this position, which will bring it 11″ below points "A" and "B". Glue and lash the short stick between points "C" and "D" on the long sticks "A-C" and "B-D". Allow to dry. (See Page 4 "Joints").

Outline String Attachment The frame is now framed with outline string. Slit the ends of all the sticks. Start the string at "C" and pass it through "E", "A", "B", and "F" and end it at "D". (See Page 5 "Outline String Attachments").

Covering The center bay marked "X" is not covered. Lay the frame on the paper, or cloth, with the spines down. Turn over 1″ hems and glue in place. Do this with the center bay as well. Cut two bands of the covering 11″ wide and 22″ long. Glue the ends of these pieces to the upper and lower bays along sticks "A-C" and "B-D". The fourth long stick "I" is then glued along the center line of these pieces, as shown. (See Page 6 "Covering").

Bridle The bridle is a single string long enough to reach from "Y" to "F" to "Z". It is fastened to points "Y" and "Z" on the fourth stick "I", as shown above. The flying string is attached at point "X".

Tail No tail is used on this kite.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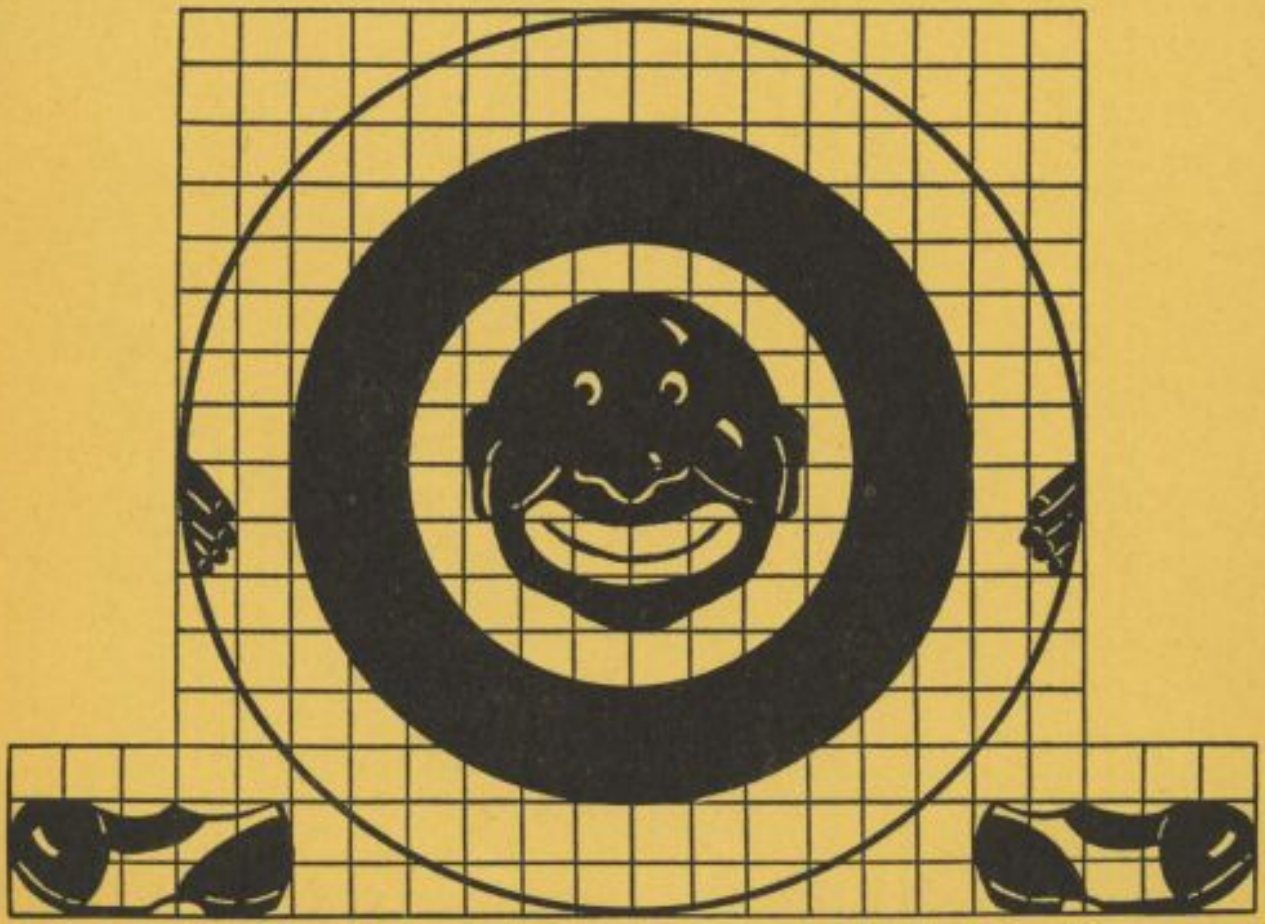
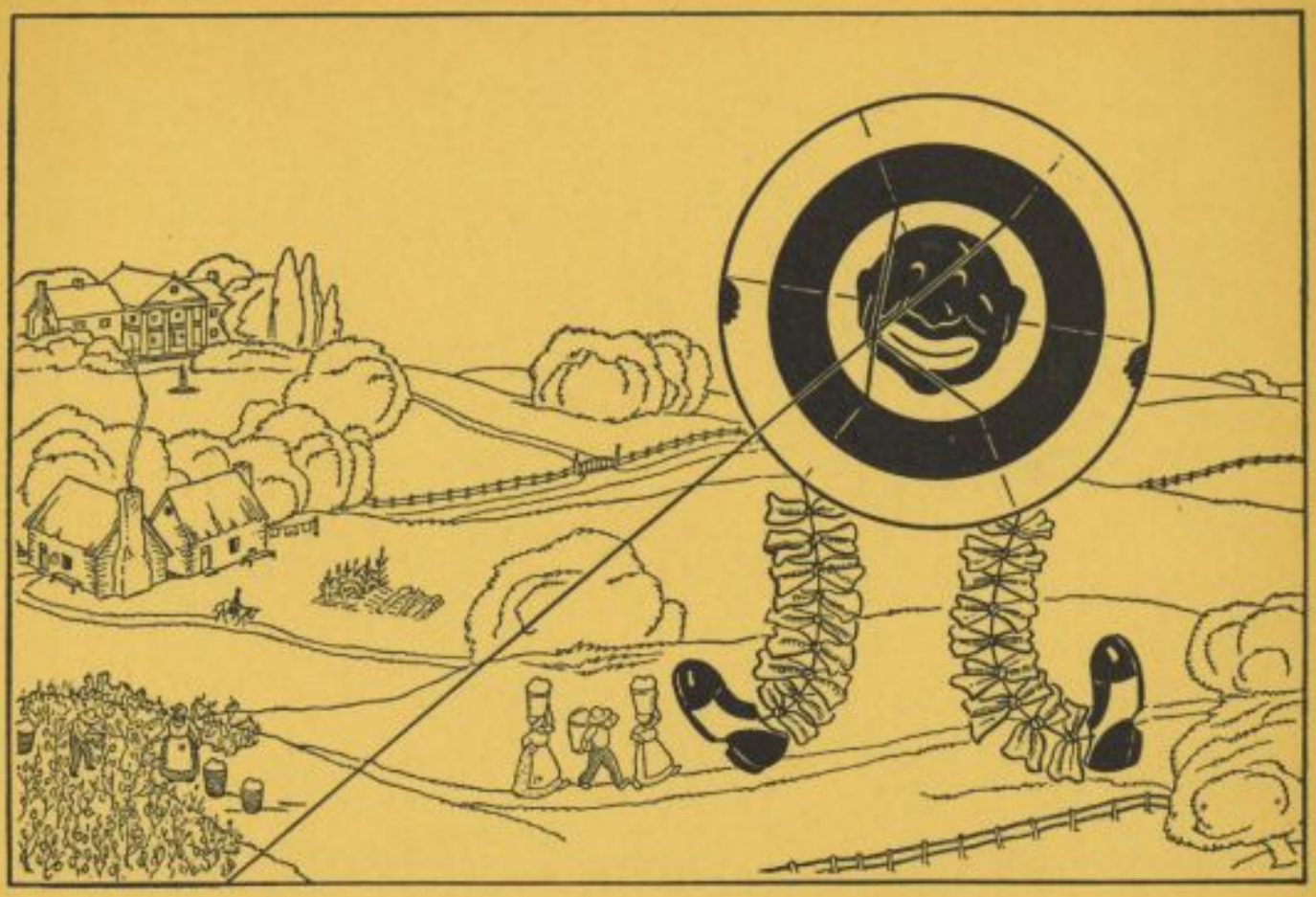




Target Kite

Frame Sticks Cut three duplicate sticks ¼″ x ¼″ x 32″ long. Sandpaper each to size and give them the balance test. (See Page 4 "Frame Sticks").

Joint The single center joint is made by one halved and one crossed-and-lashed joint. Lay out a 32″ diameter circle. Divide it into six equal arcs. Join "F-C" and "B-E" with a halved joint, while their ends rest on the arc points. Stick "A-D" is then glued and lashed across these so that its ends are on the remaining arc points. (See page 4 "Joints").

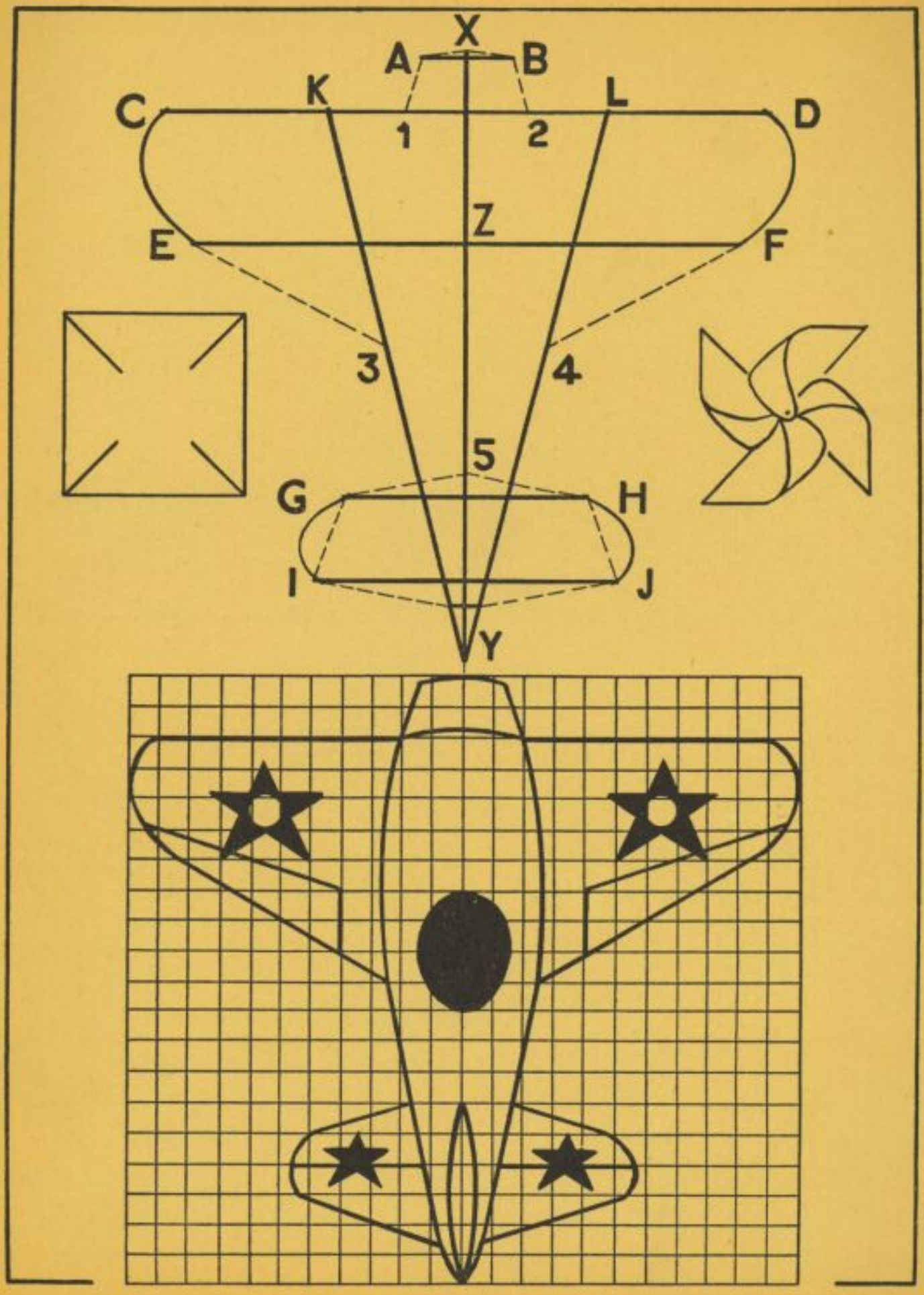
Outline Bamboo The circle of the frame is made with ⅛″ split bamboo. Lengths of 17″ will serve to outline each of the single arcs. Obtain six of these and bend them to shape. They should then be spliced and attached to the ends of the sticks. (See Page 6 "Splicing and Bending Bamboo").

Painting The face and target are painted on the covering paper before the frame is covered. This is shown on squares that represent 2″ each. Lay out and cut a 34″ diameter circle of white paper. Draw a 32″ circle in its center. Rule it with light 2″ squares and copy the face on it free-hand. Paint with black all parts shown in black on the plan. Cut two shoes of light cardboard and paint them on both sides in the same manner.

Covering Turn the paper wrong side up and lay the frame in position on it. Clip from the edge to the bamboo all around, turn over and glue securely. (See Page 6 "Covering").

Tails Two rag bow tails are attached to points "F" and "E". The cardboard shoes are fastened at their ends.

Bridle One bridle is fastened at points "1" and "2" along stick "F-C", while the ends of the other are attached to points "3" and "4" on stick "E-B". Attach the flying string just above "X". (See Page 7 "Bridles").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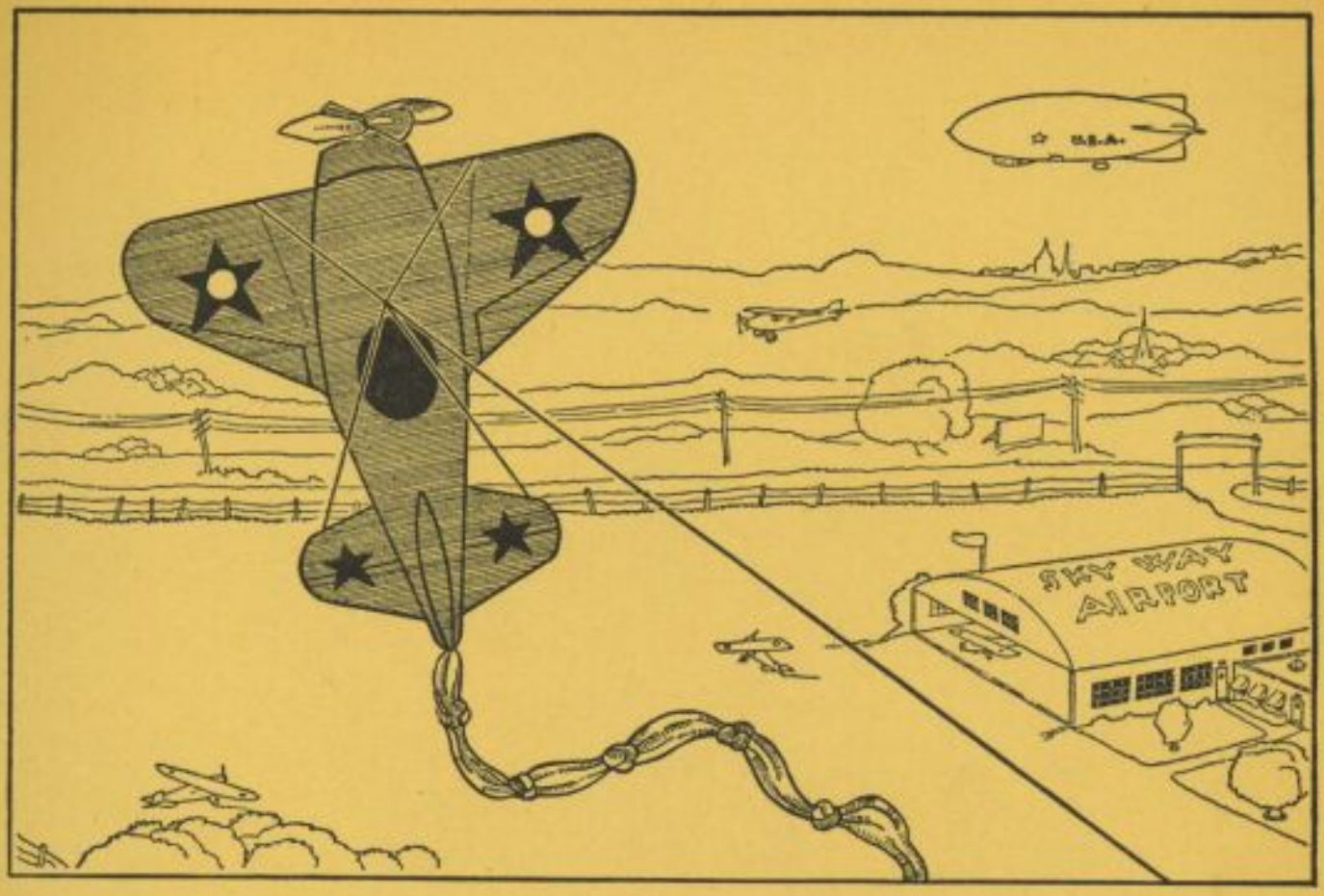


Airplane Kite

Frame Sticks All sticks are ¼″ square. Cut "X-Y" and "C-D" 40″ long. Cut "K-Y" and "L-Y" each 37½″ long. Cut "E-F" 36″ long; "A-B" 6″ long; "G-H" 16″ long; "I-J" 20″ long and the short tail stick 2″ long. Sandpaper and balance. (See Page 4 "Frame Sticks").

Joints Use the crossed-and-lashed joint. Using "X-Y" as a center stick, bind "A-B" ½″ from "X". Bind "C-D" 4″ from "X". Bind "E-F" 12½″ from "X". Stick "G-H" is bound 11″ from "Y" and "I-J" 5″ from it. All these sticks must be centered on "X-Y" and at right angles to it. Bind "K-Y" and "L-Y" to "X-Y" at "Y" and then spread their upper ends 9″ on each side of "X-Y". Bind these sticks to "C-D", "E-F", "G-H" and "I-J". Bind the tail stick to "K-Y" and "L-Y" 3½″ from point "Y". (See Page 4 "Joints").

Outline String Attachments Run a string from "A" through "X" to "B". Bring its ends to points "1" and "2" on stick "C-D" 4″ on each side of "X-Y". Run strings from "E" and "F" to points "3" and "4" on sticks "K-Y" and "L-Y" 7″ from "E-F". A single string is run from "5", which is 1½″ from "G-H", to "H" to "J" to the tail stick. It then goes to "I" to "G" and back to "5". Bend ⅛″ split bamboo for wing and tail tips, and bind to points "C", "D", "E", "F" and "G", "H", "I" and "J". (See Page 5 "Outline String Attachments").

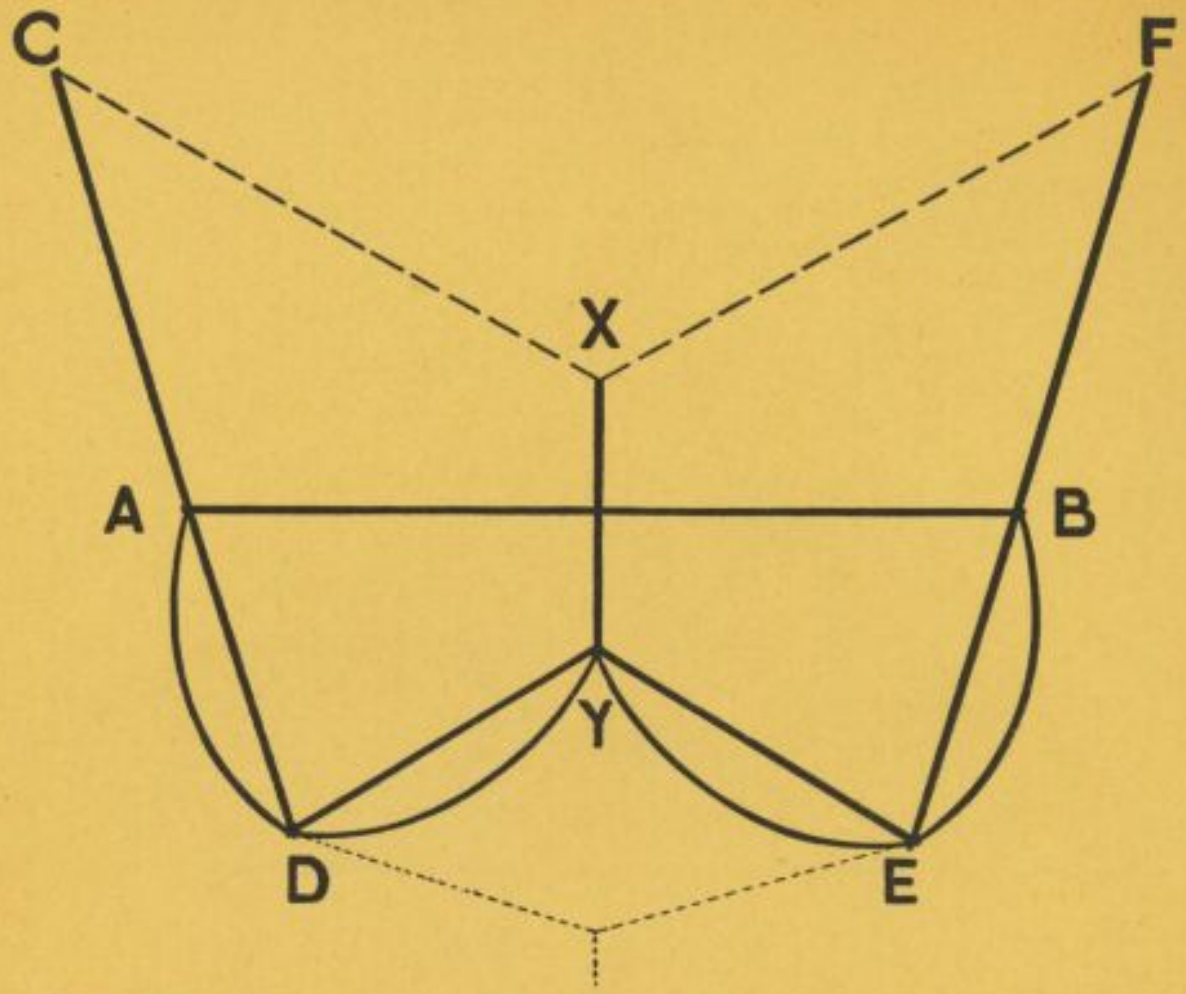
Covering Lay the frame on the paper with "X-Y" down and glue 1″ hem all around. (See Page 6 "Covering").

Propeller Fold a pinwheel of light paper and attach to "X" with a single pin.

Tail Attach a rag tail at "Y".

Bridle One string is attached to points "K" and "H". The other is fastened to "L" and "G". The flying string is fastened to them at point "Z".

Painting Paint in any colors.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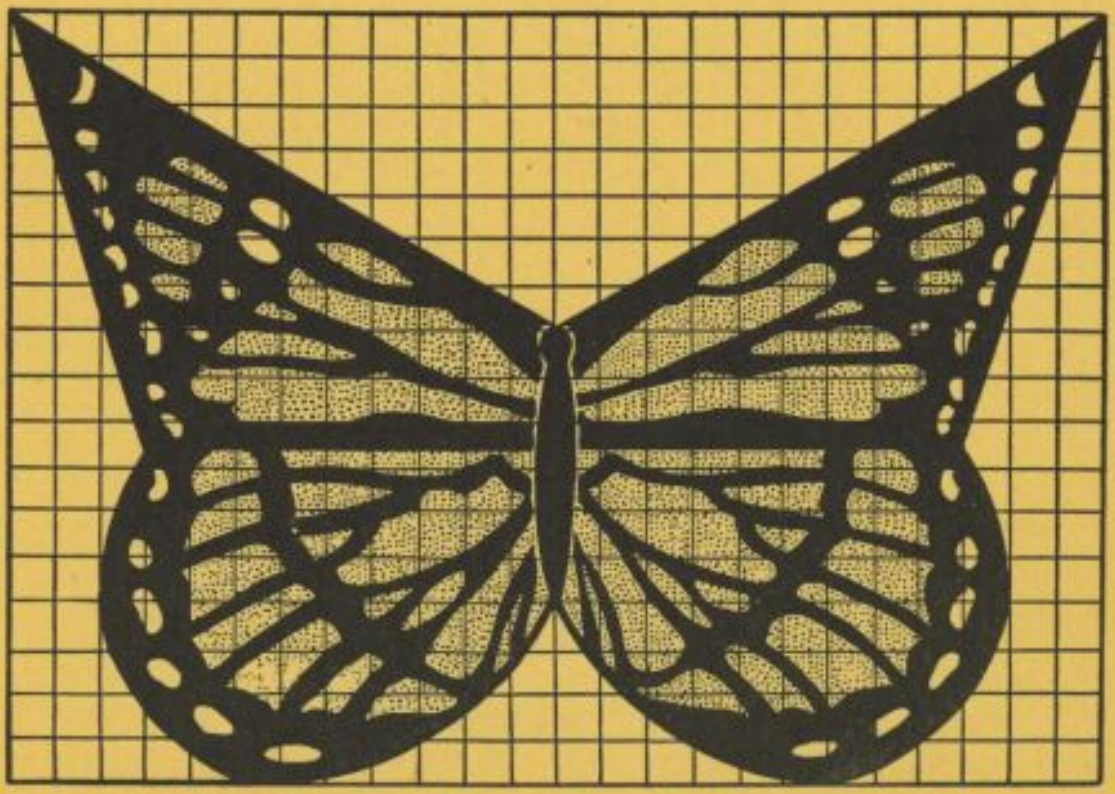
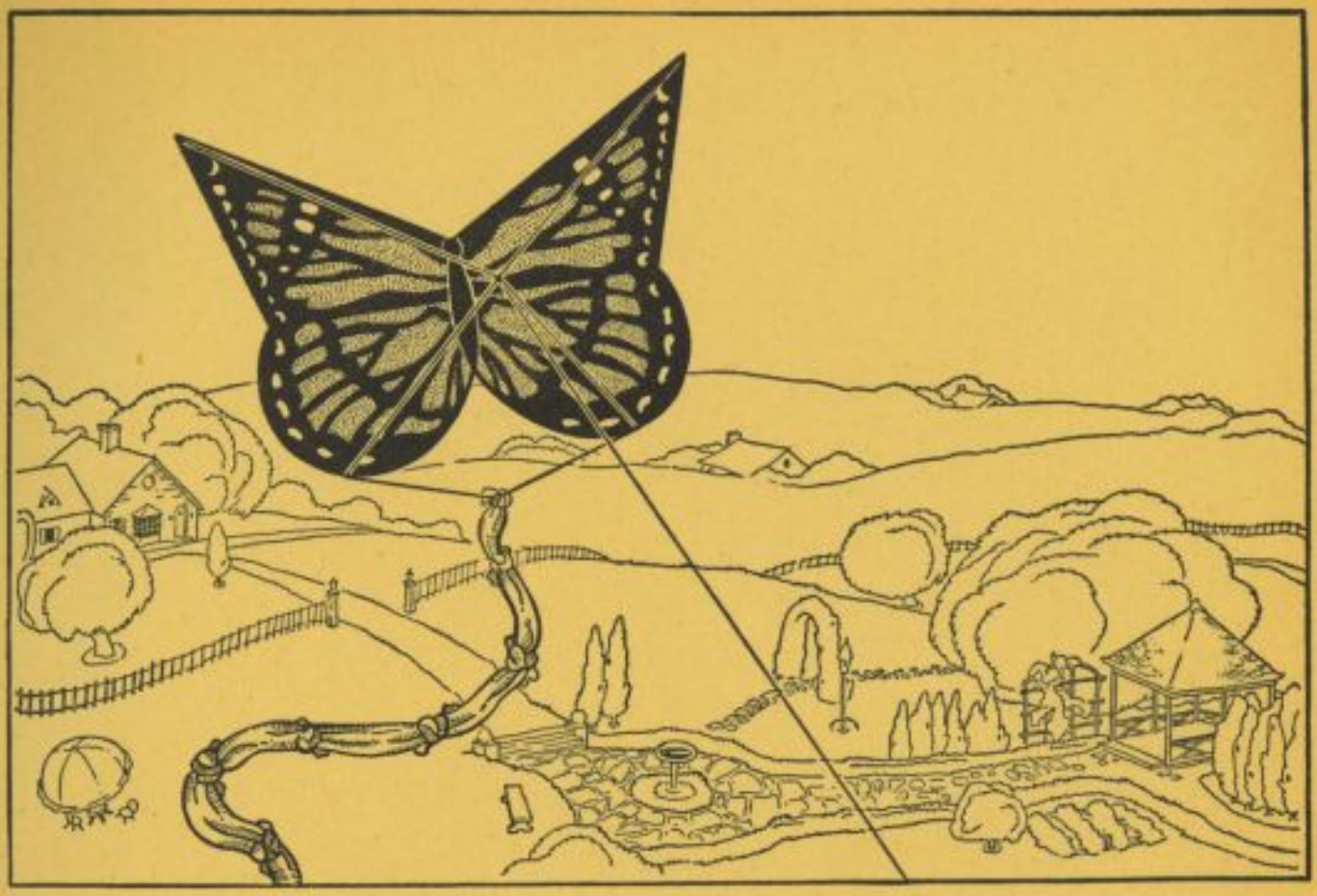




Butterfly Kite

Frame Sticks Six ¼″ square sticks are used for this kite. Stick "X-Y" is 12″ long, while the two side sticks "C-D" and "E-F" are each 35″ long. The cross stick "A-B" is cut 36″ long. The short sticks "D-Y" and "E-Y" are both 16″ long. Sand to size and give the balance test. (See Page 4 "Frame Sticks").

Joints The crossed-and-lashed joint is used throughout. Stick "A-B" crosses "X-Y" in its center and extends on both sides of it an equal distance. Glue and lash this in place. Sticks "C-D" and "E-F" are glued and lashed to the ends of "A-B", so that points "C" and "F" are 56″ apart. Sticks "D-Y" and "E-Y" are glued and lashed to the ends of these sticks at "D" and "E" and meet at point "Y" where they are bound.

Bamboo Outline Outlines "A-D-Y" and "B-E-Y" are formed with two pieces of ⅛″ split bamboo bent to shape and bound in place. (See Page 6 "Splicing and Bending Bamboo").

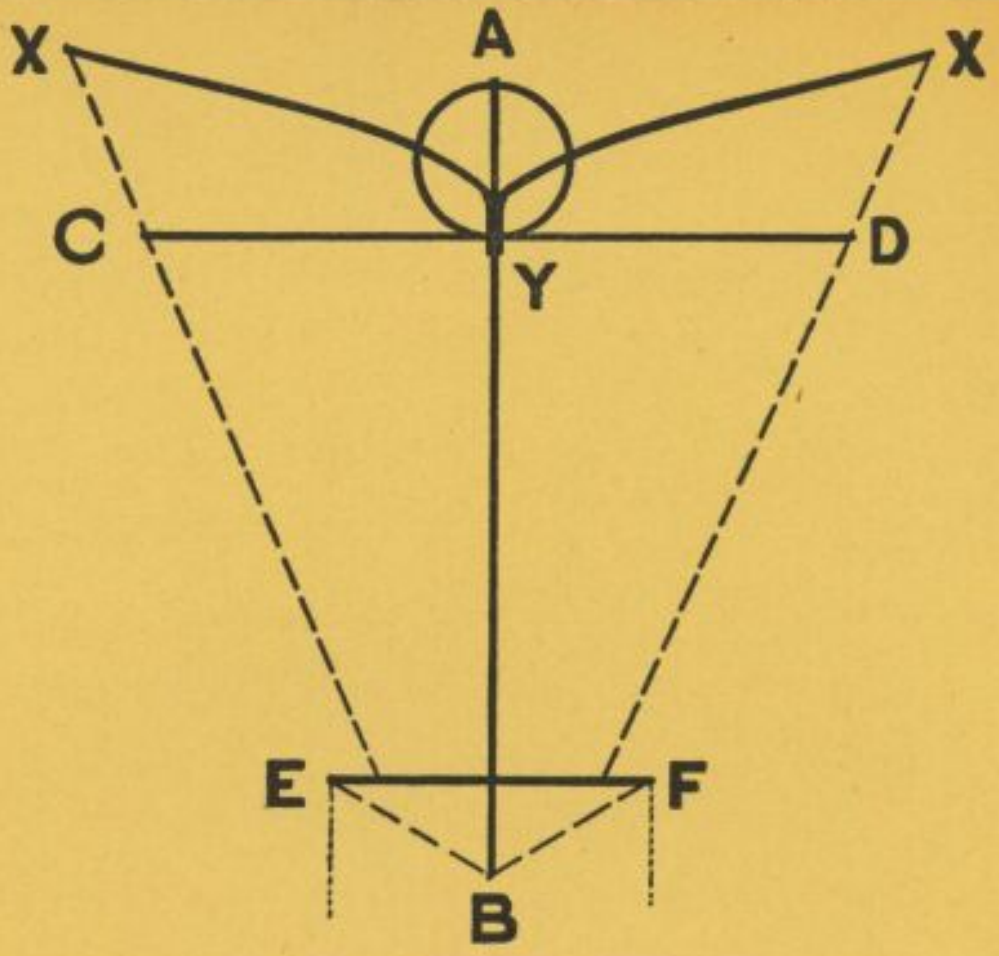
Outline String Attachments Run a string from "C" to "X" to "F". (See Page 5 "Outline String Attachments").

Painting Paint the design on the paper before covering the kite. It is shown on 2″ squares. Rule light 2″ squares on your paper and draw the butterfly free-hand. Paint the shaded parts orange, the black ones black and leave the others white.

Covering Lay the frames with stick "X-Y" down on the paper, turn up a 1″ hem and glue. (See Page 6 "Covering").

Bridle Attach a string at "C" and "E" long enough to reach from "C" to "F" to "E". The other is the same length and is attached to "F" and "D". The flying string is fastened at "X". (See Page 7 "Bridles").

Tail Attach a brightly dyed rag tail to a bridle fastened to points "D" and "E".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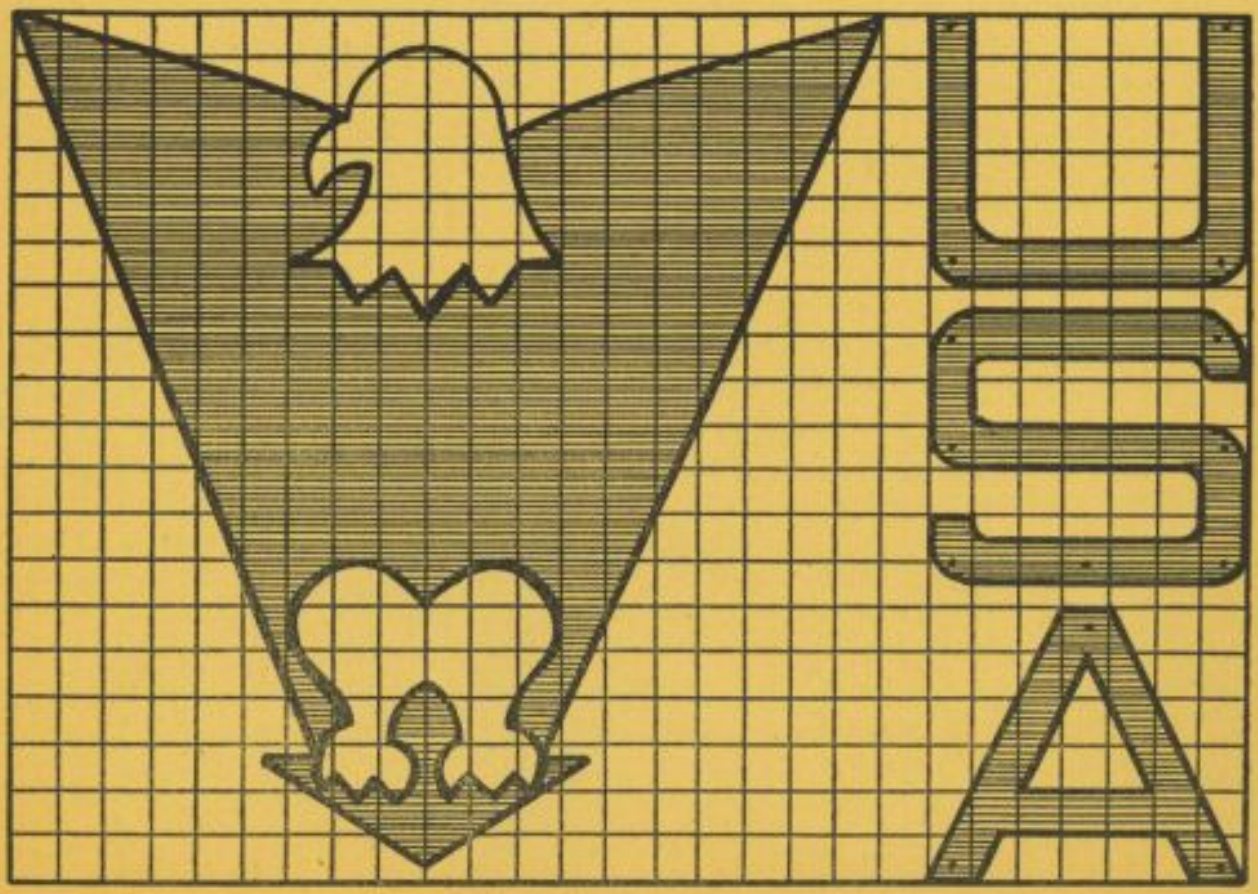
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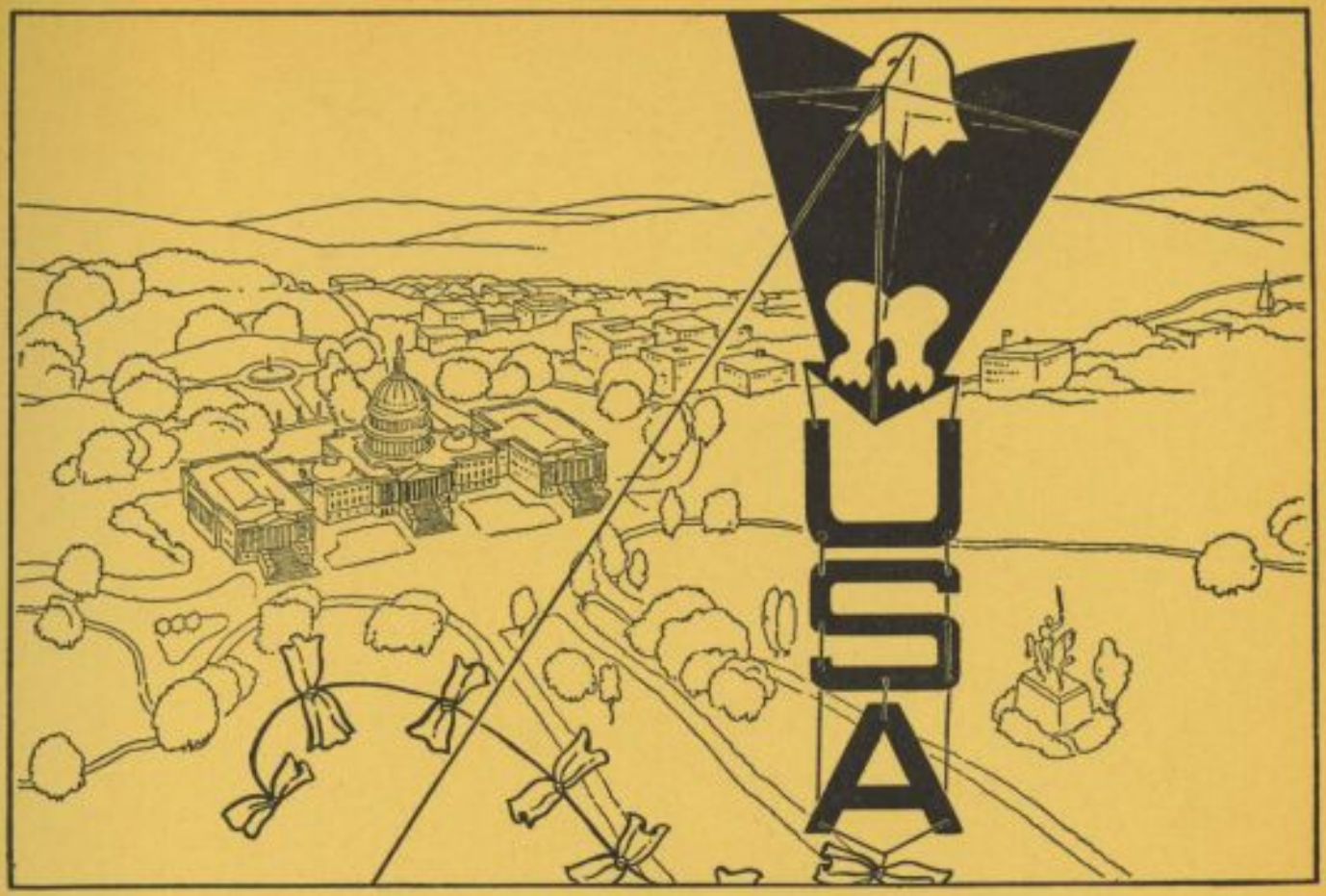


U. S. Eagle Kite

Frame Sticks Cut the spine "A-B" ¼" x ¼" x 35" long. Cut the cross stick "C-D" ¼" x ¼" x 30" long. The short cross stick is 1/16" x ⅛" x 14" long. Sand each and give them the balance test. (See Page 4 "Frame Sticks").

Joints Use a crossed-and-lashed joint to fasten "C-D" across "A-B" 7" from point "A". Stick "E-F" is centered on "A-B" 4" from "B". Both these sticks must be centered on "A-B" and lashed at right angles to it. The head circle is 7" in diameter and is bent from a length of 1/16" split bamboo. The duplicate lengths "X-Y" are of ⅛" split bamboo approximately 20½" long. Bend and attach at "Y" on stick "A-B". (See Page 4 "Joints").

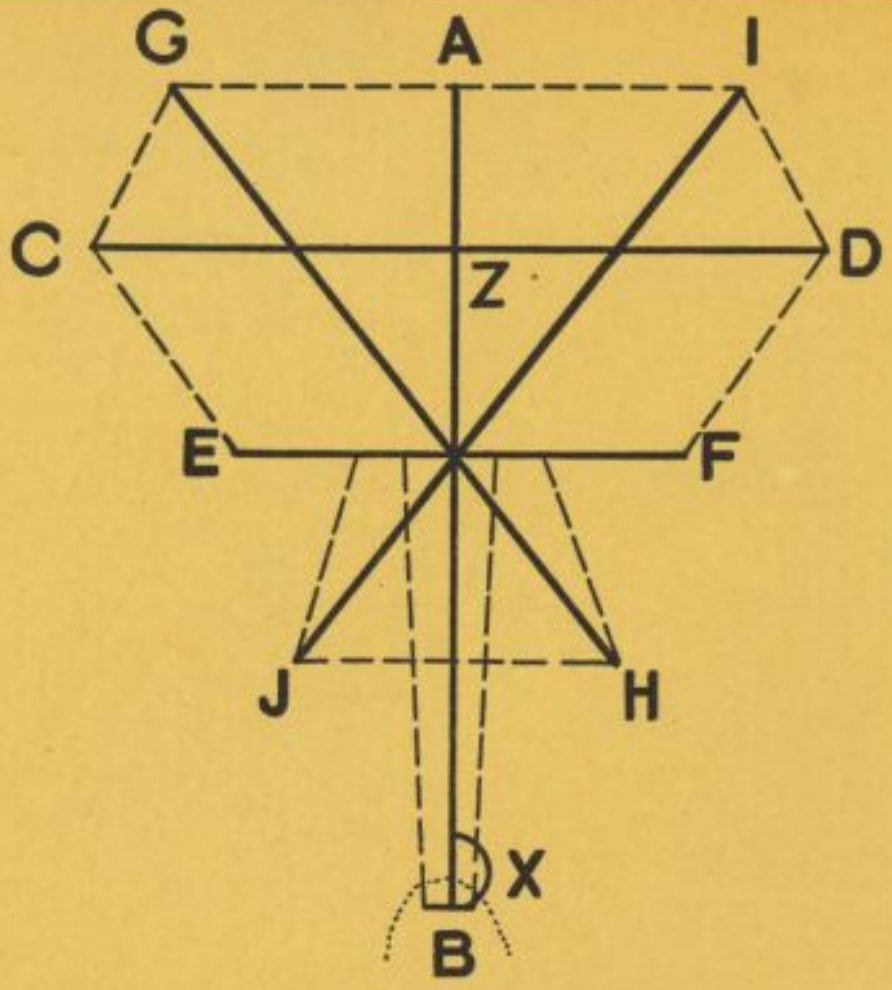
Outline String Attachments Run strings from points 2" in from "E" and "F" straight up to "C" and "D" and then straight to points "X". Cut the bamboo pieces "X-Y" to correct length after these strings are attached. Run a third string from "E" to "B" and end it at"F". (See Page 5 "Outline String Attachments").

Painting Draw the eagle on paper freehand, after ruling it with 2" squares, as shown. Leave the head and feet white and paint the balance black or blue.

Covering Cover in the usual manner with the spine "A-B" against the paper. (See Page 6 "Covering").

Tail Trace the letters "U","S","A" on light cardboard and cut them out. Paint any desired color. String these on two strings fastened to points "E" and "F" and hold with knots. A paper bow tail is then fastened by a loop under the "A". (See Page 6 "Kite Tails").

Bridle A two-string bridle is used. Attach one end of the long one to "A" and its other end to "B". The second string is fastened to "C" and "D". Tie the flying string just below "Y" on these strings. (See Page 7 "Bridles").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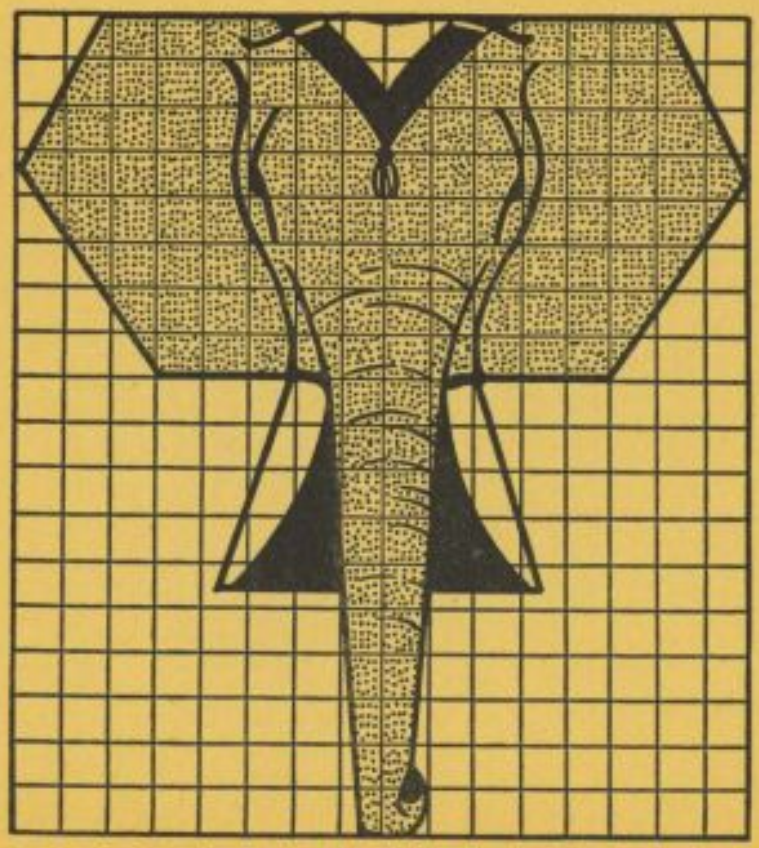
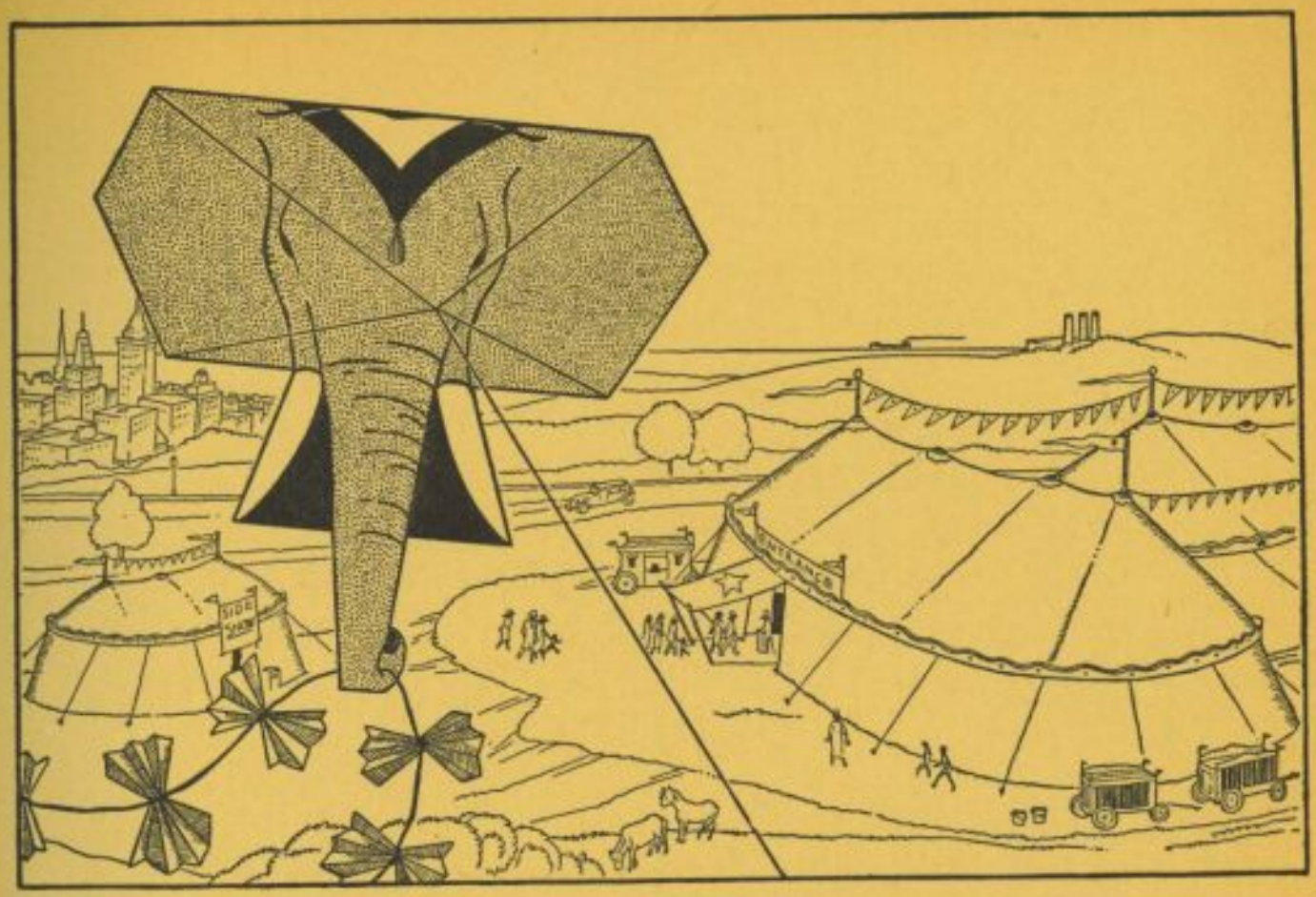




Elephant Kite

Frame Sticks All sticks are ¼″ square. Cut the spine "A-B" 36″ long. Cut the stick "C-D" 32″ long and "E-F" 20″ long. The duplicate sticks "G-H" and "I-J" are cut 32″ long. The short one at "B" is 2″ long. Sand each to size and balance. (See Page 4 "Frame Sticks").

Joints Use a crossed-and-lashed joint on all sticks. Bind the center of "C-D" to "A-B" 7″ from "A". Center and bind "E-F" to "A-B" 16″ from "A". Bind "B" to the end of "A-B". Cross sticks "G-H" and "I-J" on the center of "E-F", so that they cross "C-D" 9″ on each side of "A-B" with their ends "G" and "I" level with "A". A 3″ diameter circle "X" of bamboo is attached to the right side of "A-B". (See Page 4 "Joints").

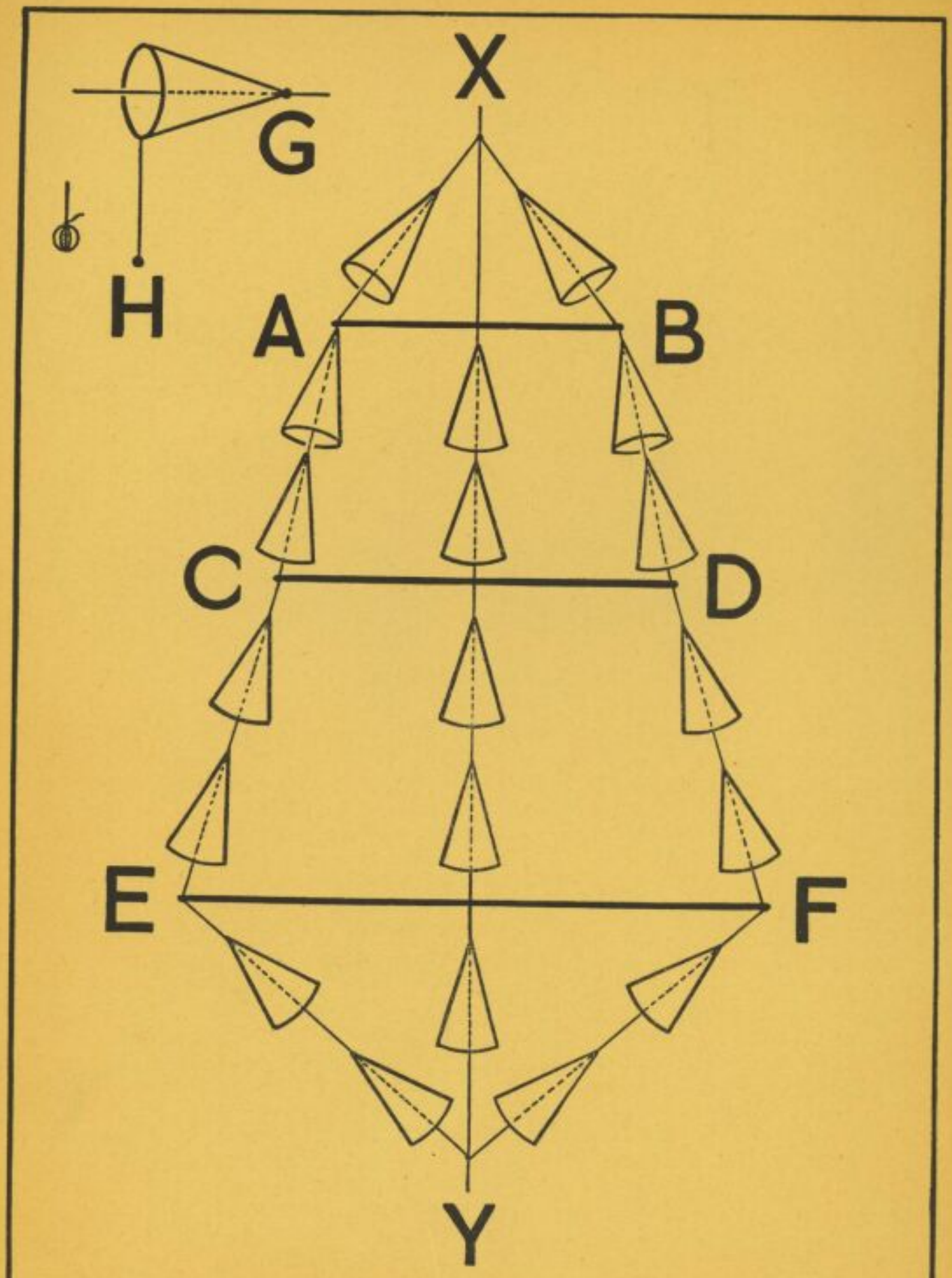
Outline String Attachments Start one string at "E" and carry it through "C", "G", "A", "I", "D" and end it at "F". Run two strings from the ends of stick "B" up to "E-F" and fasten them 2″ on each side of "A-B". A string is started on "E-F" 6″ in from "E". Run it to the end of "I-J" at "J", across to "H" and up to "E-F" 6″ in from "F". (See Page 5 "Outline String Attachments").

Painting Paint the covering paper before applying it. Cut it to shape, draw light 2″ squares, and then draw free-hand the elephant head, as in the graph plan. The shaded portions are painted gray, the white parts left white and the black is painted black. The head cloth may be painted red. (See Page 3 "Paint").

Covering Cover in the usual manner with "A-B" down on the paper. (See Page 6 "Covering").

Bridle Cut two strings as long as "G-I-F". Attach them at points "G", "F", "E" and "I". Attach the flying string above "Z".

Tail A paper bow tail is used in two lengths attached at "X". (See Page 6 "Kite Tails").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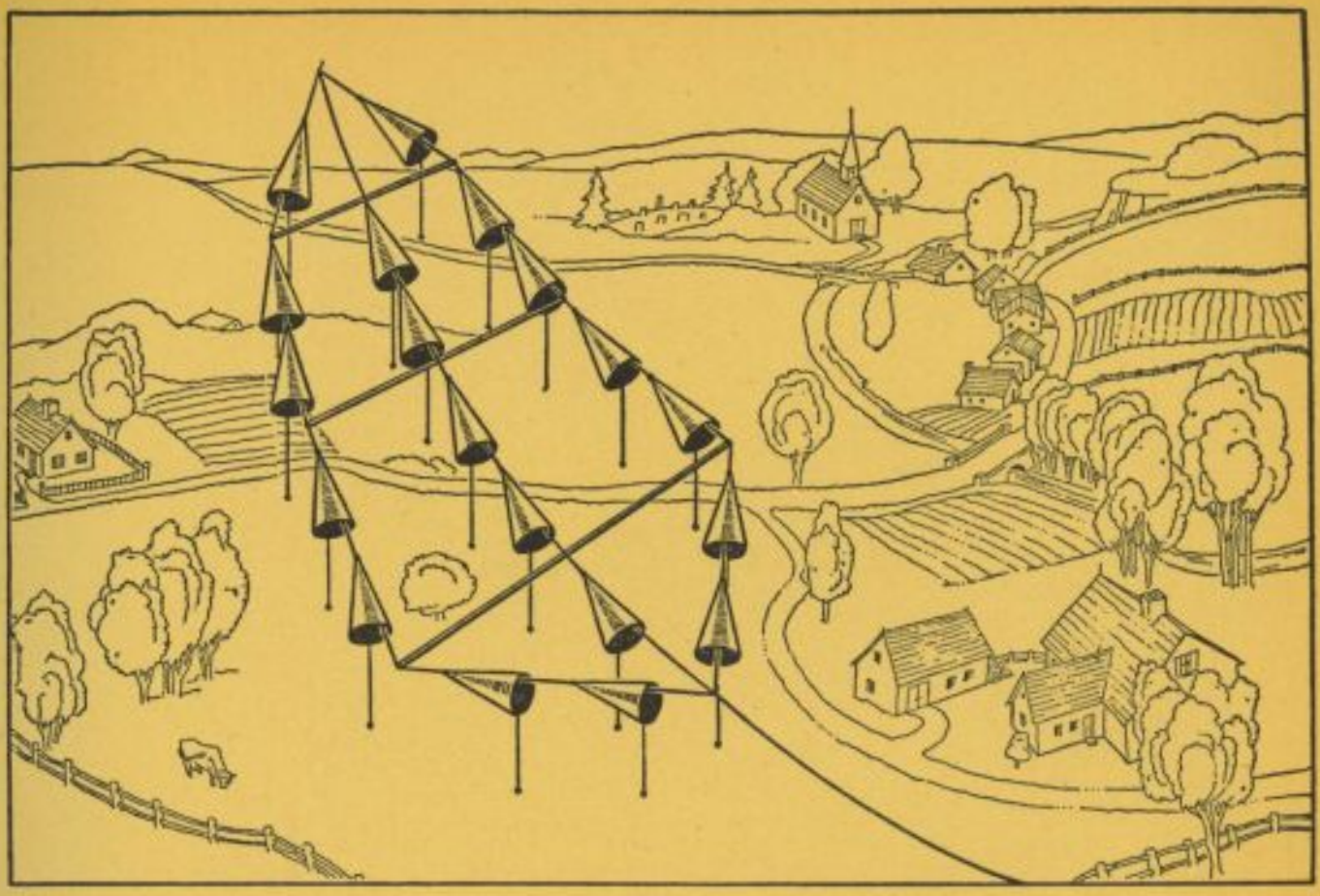
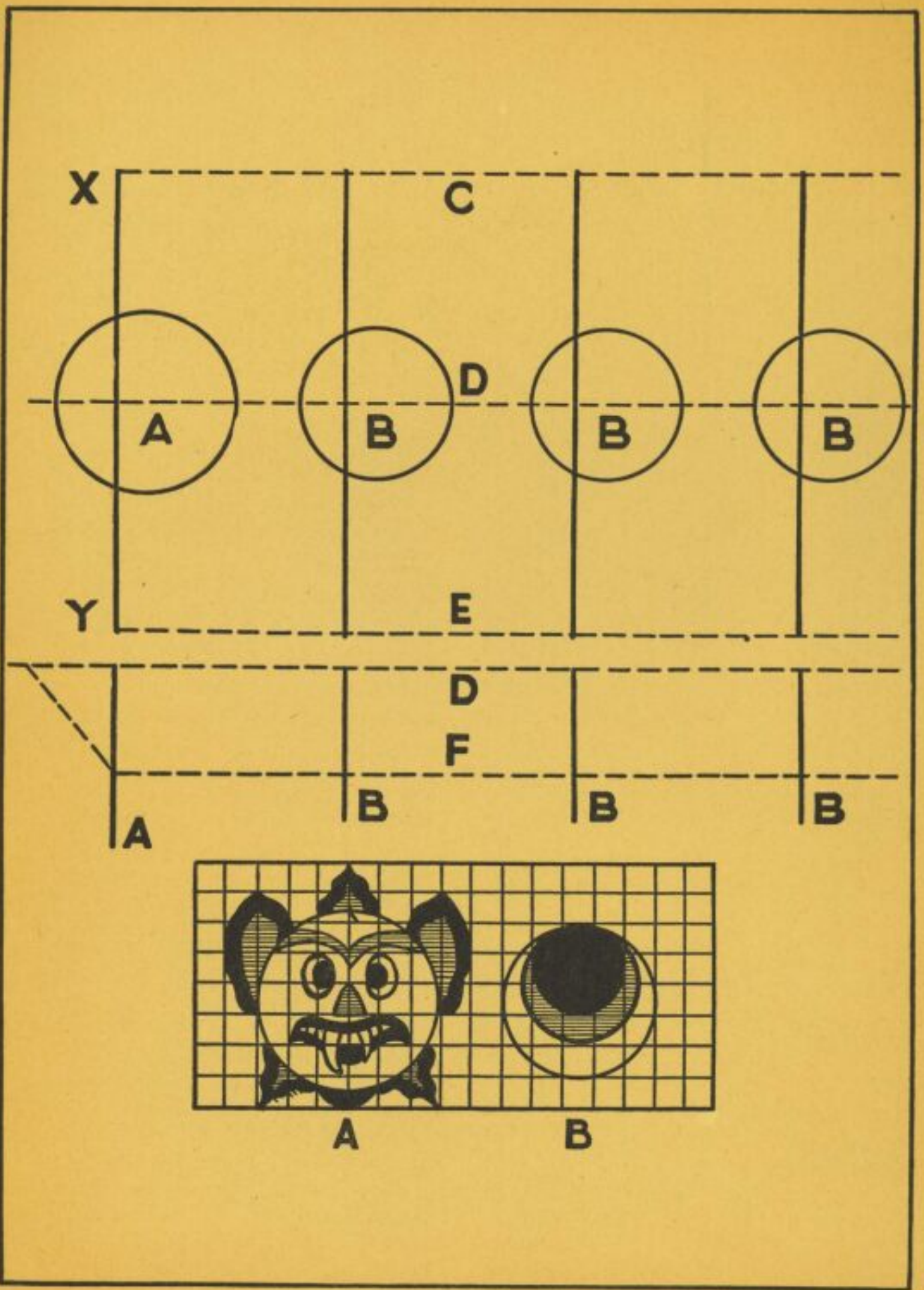


Cup Kite

Frame Sticks Three dowel sticks are used in this interesting cup kite. Stick "A-B" is 3/16" in diameter and 12" long. Stick "C-D" is "¼ in diameter and 17" long, while the third stick "E-F" is ¼" in diameter and 25" long. Dowel sticks seldom need sandpapering, but each should be given the balance test. (See Page 4 "Frame Sticks").

Outline String Attachments The outline strings in this kite serve two purposes. They hold the sticks together and carry the cups which take the place of the usual kite covering. The string "X-Y" is 44" long. The distance "X" to "A-B" is 8", while stick "C-D" is 11" below "A-B". Stick "E-F" is 14" from "C-D", and point "Y" is 11" below "E-F", as shown in the plan. Before applying this string, ordinary cone-shaped paper drinking cups must be obtained. You will require nineteen of them. They can be purchased for a few cents. Each cup is equipped with a weight, as shown at "H" in the plan. These may be split sinkers, such as fishermen use, or regular B-B shot. These lead weights may be grooved with a knife and a length of light thread tied around them. The other end of the thread is then fastened through the rim of the cup, as shown. The cups are threaded on the outline string by tying a knot in the string just outside the point of the cup. The string is then passed through a hole in the point of the cup, through the cup and out, as shown at "G". Weave the five cups on string "X-Y" and fasten it to the sticks, as shown. A second string is then started at "X" and passed through points "A", "C", "E", "Y", "F", "D", "B" and back to "X".

Flying String and Bridle The "E-Y-F" part of the outline string serves as a bridle. The flying string is attached at point "Y". The tiny lead weights on each cup serve as tails.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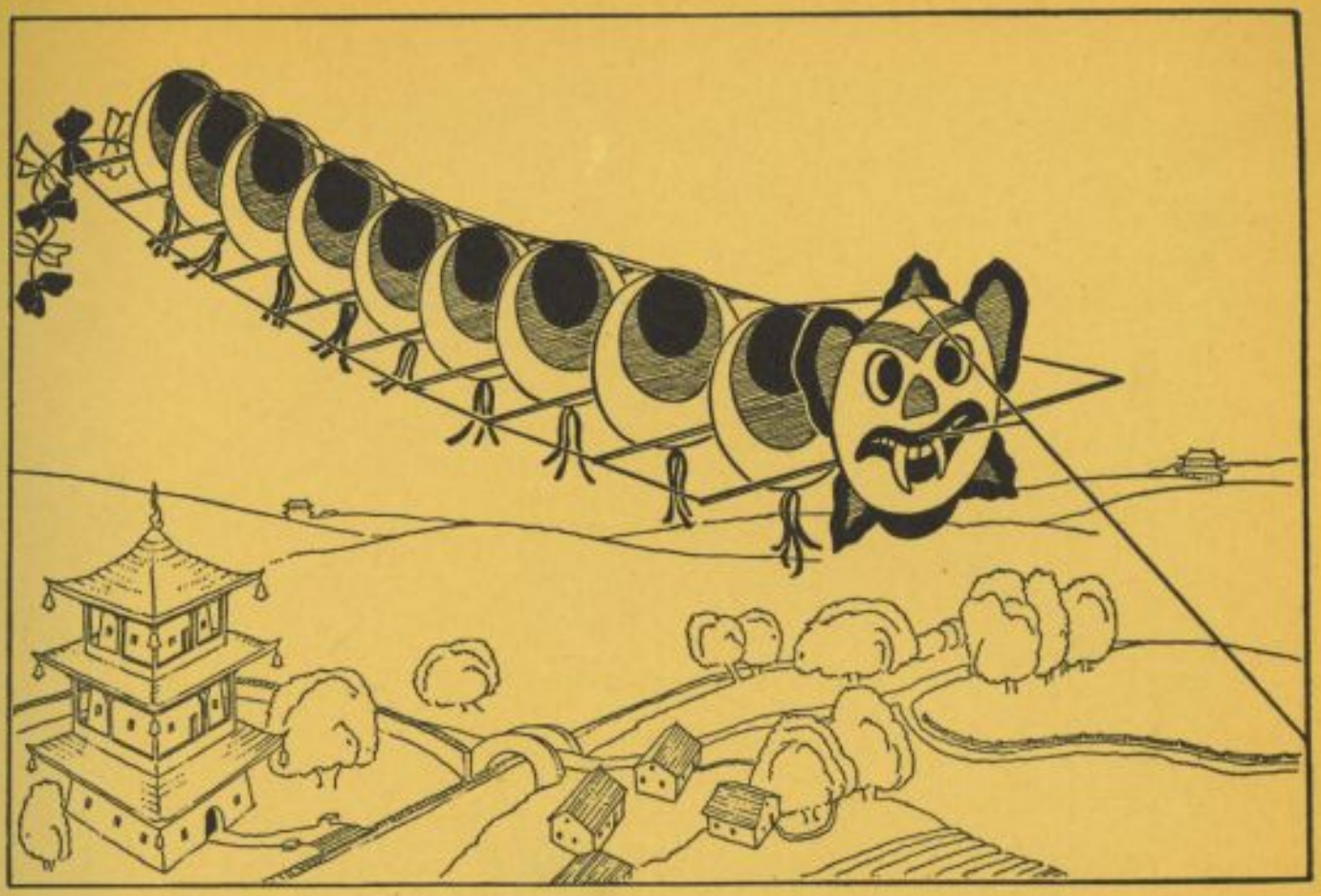


Dragon Kite

This consists of a head disk and a series of body disks. Each is fitted with a bamboo outrigger and joined together by four strings. While the one shown here has only nine body disks, many dragon kites have as many as thirty. You may easily increase the length of your kite by adding more body kites.

Frames The head disk "A" is 12″ in diameter, while the body disks "B" are 10″. All are made with ⅛″ split bamboo bent in a circle to correct diameter. A 1/16″ x ⅛″ x 35″ bamboo stick "X-Y" is centered across each disk 2″ below its center, as shown by the line "F" in the plan. The stick is bound to the circle at both points of intersection. Give each stick the balance test before attaching. (See Page 4 "Frame Sticks").

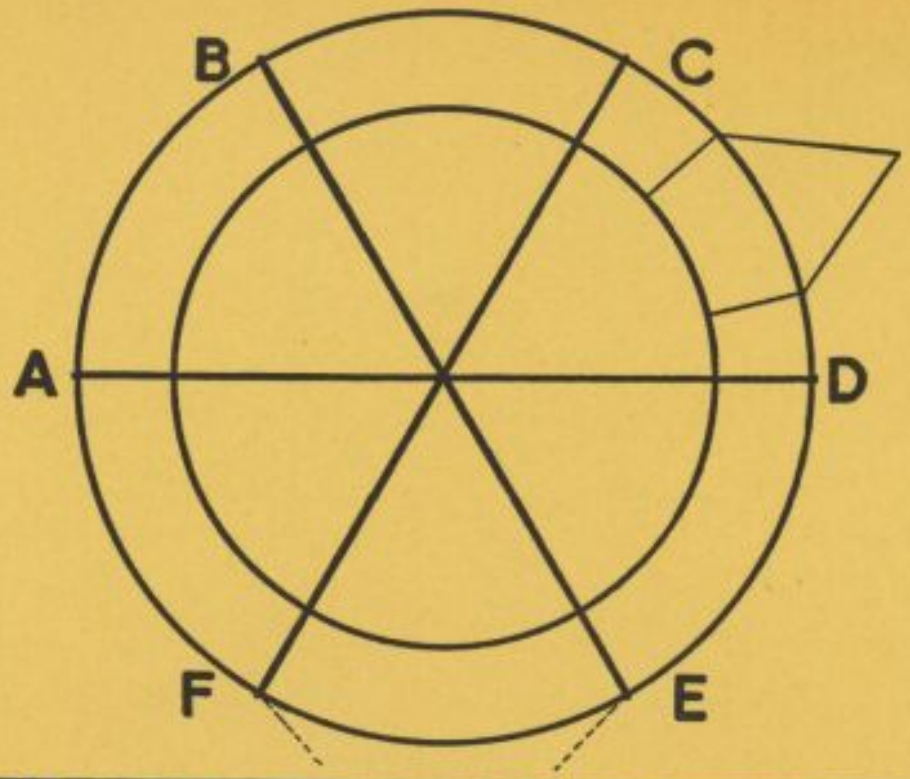
Covering Make full-size patterns of the head and one body disk from the graph plan. This is shown on 2″ squares to aid in the copy work. Trace one head and as many body disks as needed on the covering paper. Cover each kite with the stick "X-Y" up. (See Page 6 "Covering").

Painting Leave white parts white. Paint shaded parts red and black ones black.

Outline String Attachments String the disks 15″ apart. Fasten string "C" and "E" along the ends of the sticks "X-Y", as shown. Apply string "F" through each disk to the center of each "X-Y" stick. Fasten the fourth string "D" directly above "F" through the top of each disk. Wrap around each joint and tie, as you apply these strings.

Bridle Continue string "D" and "F" to a point 25″ from the head disk and tie for a bridle. Attach the flying string at this point.

Tails Add small rag tails to the bottom-center of each disk and to the center of the last "X-Y" stick. Add cardboard decorations to the head disk, as shown.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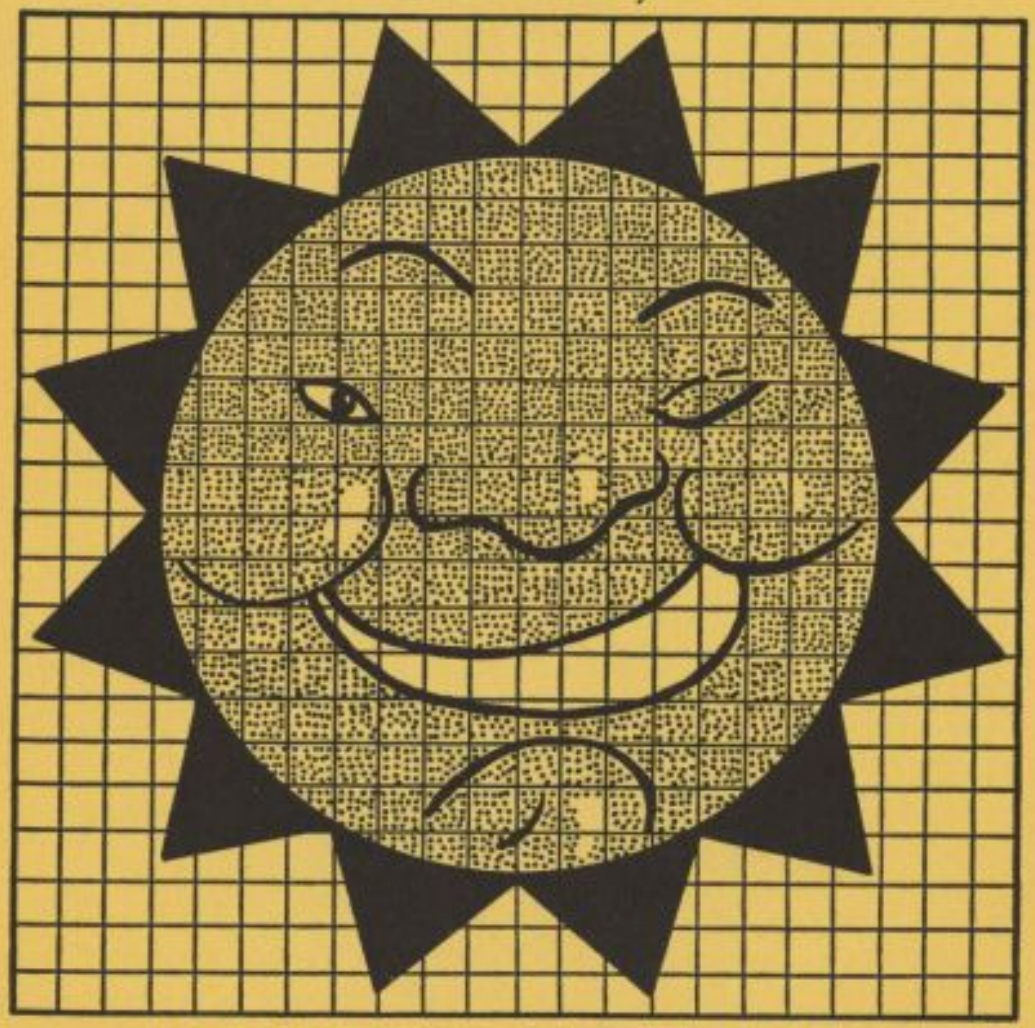
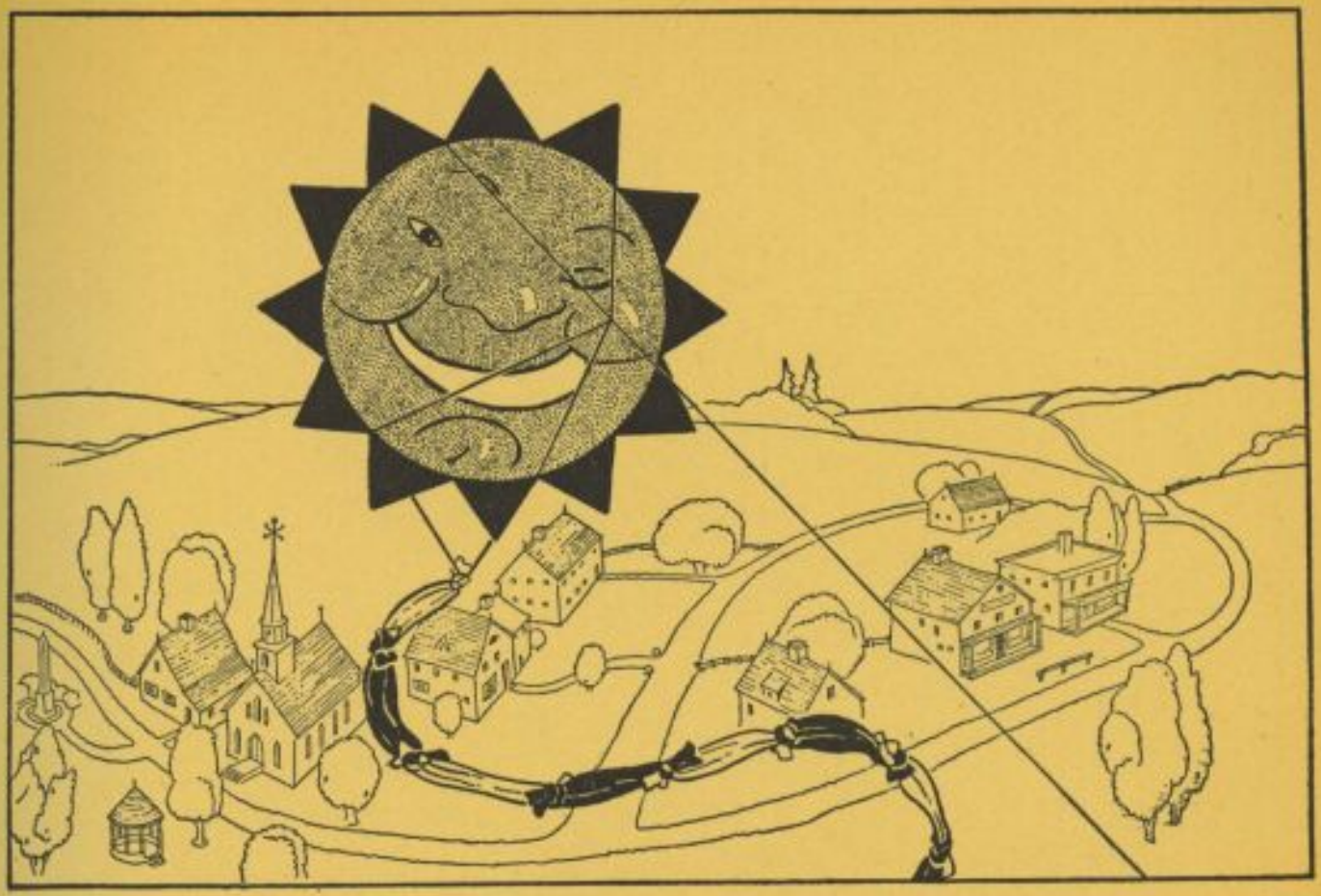




Mr. Sun Kite

Frame Sticks This frame is made exactly as the kite on Page 27, except that it has a circle of bamboo on the inside. Cut three sticks ¼″ x ¼″ x 32″ long. Sandpaper and give them the balance test. (See Page 4 "Frame Sticks").

Joints Make the joint of "F-C" and "B-E" a halved one and use a crossed-and-lashed joint for "A-D". See that the ends of the sticks divide a 32″ diameter circle into six equal arcs before gluing and lashing. (See Page 4 "Joints").

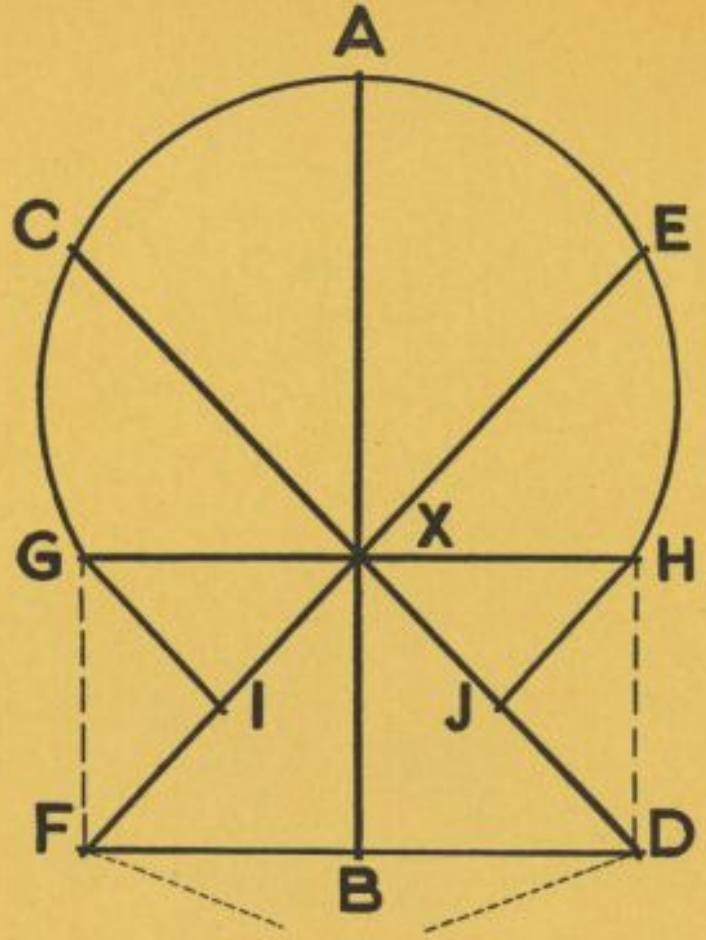
Outline Bamboo Follow the instructions given on Page 27 under "Outline Bamboo". A second circle of the same bamboo is applied 4″ in from the outline one and is attached in the same manner.

Painting and Decorating Cut a 34″ diameter circle on the covering paper. Draw a second circle within the first 32″ in diameter. In this second circle, rule 2″ squares. Make a free-hand drawing of the sun's face on these squares. Paint yellow all parts shown in dotted shading and all lines in black. Leave white parts white. Cut out cardboard, or heavy wrapping paper triangles, as in the upper plan. Paint these a deep orange.

Covering Cover in the usual manner with stick "A-D" down on the paper. Glue the triangles around the kite to both bamboo circles. (See Page 6 "Coverings").

Bridle This consists of two strings as long as "A-C-E". Attach one to points "B" and "E" and the other to points "C" and "F". Bring them together in the center just above "A-D" and attach the flying string at this point. (See Page 7 "Bridles").

Tail A short bridle is fastened to points "F" and "E". It should be twice as long as the distance between these two points. In its exact center, attach a long tail of the knotted rag type. Dye every other one a dark color for added effect.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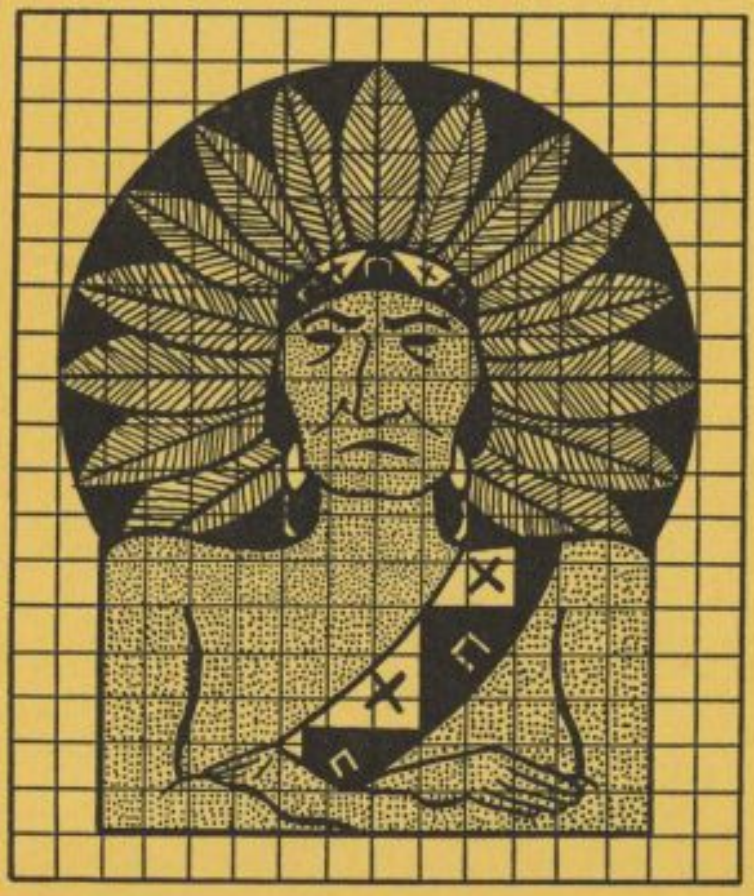
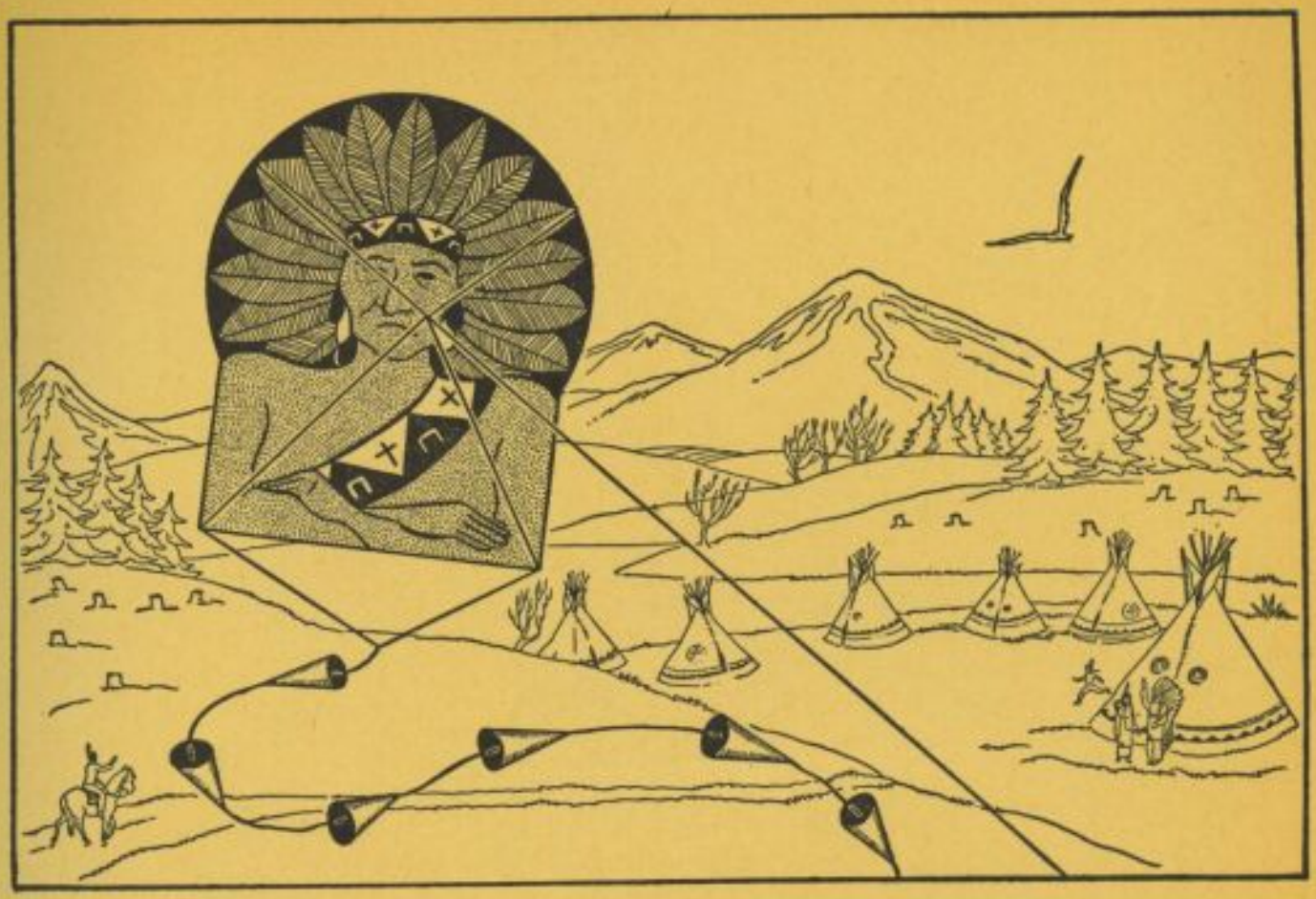




Indian Chief Kite

Frame Sticks Cut the spine "A-B" ¼" x ¼" x 34" long. Cut sticks "G-H" and "F-D" ¼" x ¼" x 24" long. Sticks "E-F" and "C-D" are ¼" x ¼" x 36" long. Sandpaper and give them the balance test. (See Page 4 "Frame Sticks").

Joints Center "F-D" on "A-B" at end "B" and glue and lash it to "A-B" at right angles, as shown. Center "G-H" on "A-B" 13" from point "B" and glue and lash it at right angles to "A-B". Turn the frame over and glue and lash the ends of "E-F" and "C-D" to points "F" and "D". Cross the sticks on "G-H" at point "X", glue and lash them together and fasten in the same way to "A-B" and "G-H" at "X". Bend a length of 1/16" x 1/8" split bamboo and fasten its end at "I", which is 9" from point "X" on stick "E-F". Attach it around the other sticks at "G", "C", "A", "E", "H" and end it at "J" on stick "C-D" 9" from point "X". (See Page 4 "Joints").

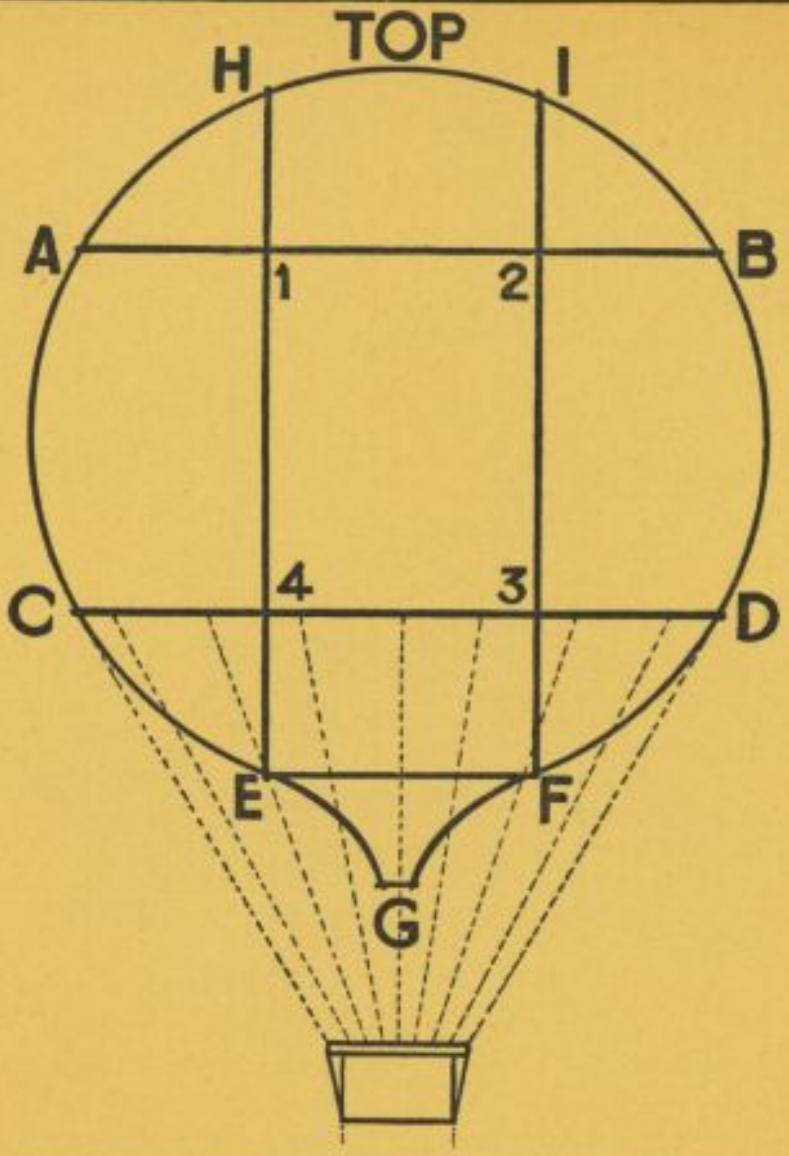
Outline String Attachments Run a string from point "G" to point "F". Run another string from "H" to "D", as shown. (See Page 5 "Outline String Attachments").

Painting Rule the covering paper with 2" squares and draw a copy of the Indian on them. Paint all parts shown in dotted shading a light brown. The black parts are painted red, while the ones shown in white are left white. Feathers should be painted a variety of colors.

Covering Cover the frame in the usual way. (See Page 6 "Covering").

Bridle Cut two strings the length of "F-C-E". Attach one at "E" and "F" and the other at "C" and "D". Gather them together on a level with "C-E" and attach the flying string at this point. (See Page 7 "Bridles").

Tail A cup tail is used on this kite and is attached to a bridle from "F" and "D". (See Page 6 "Kite Tails").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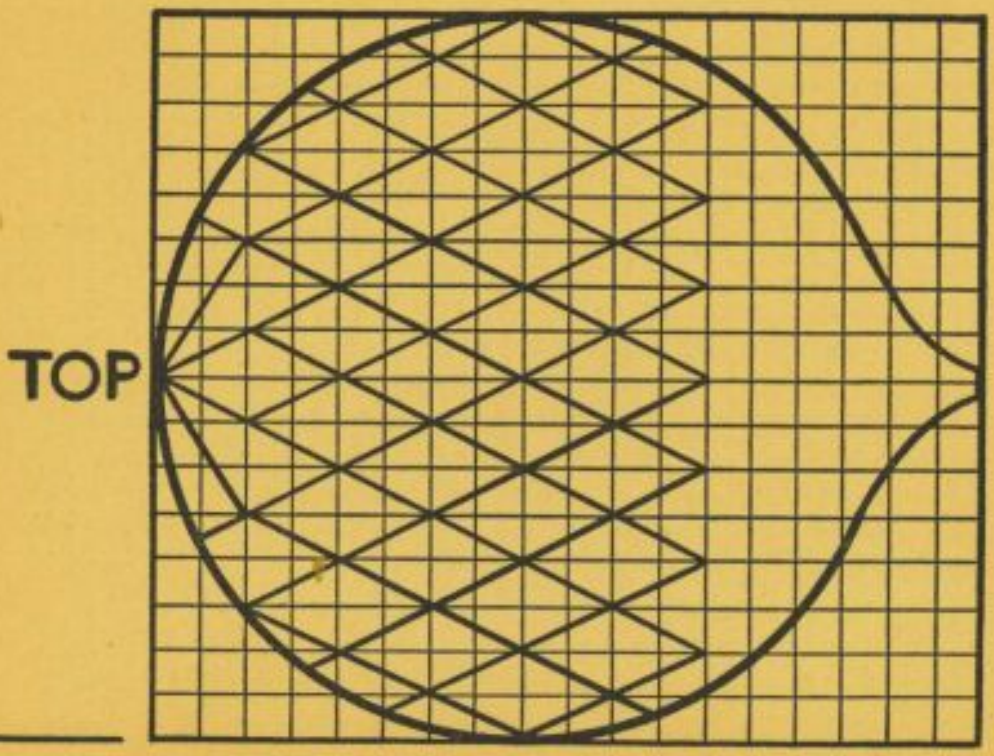
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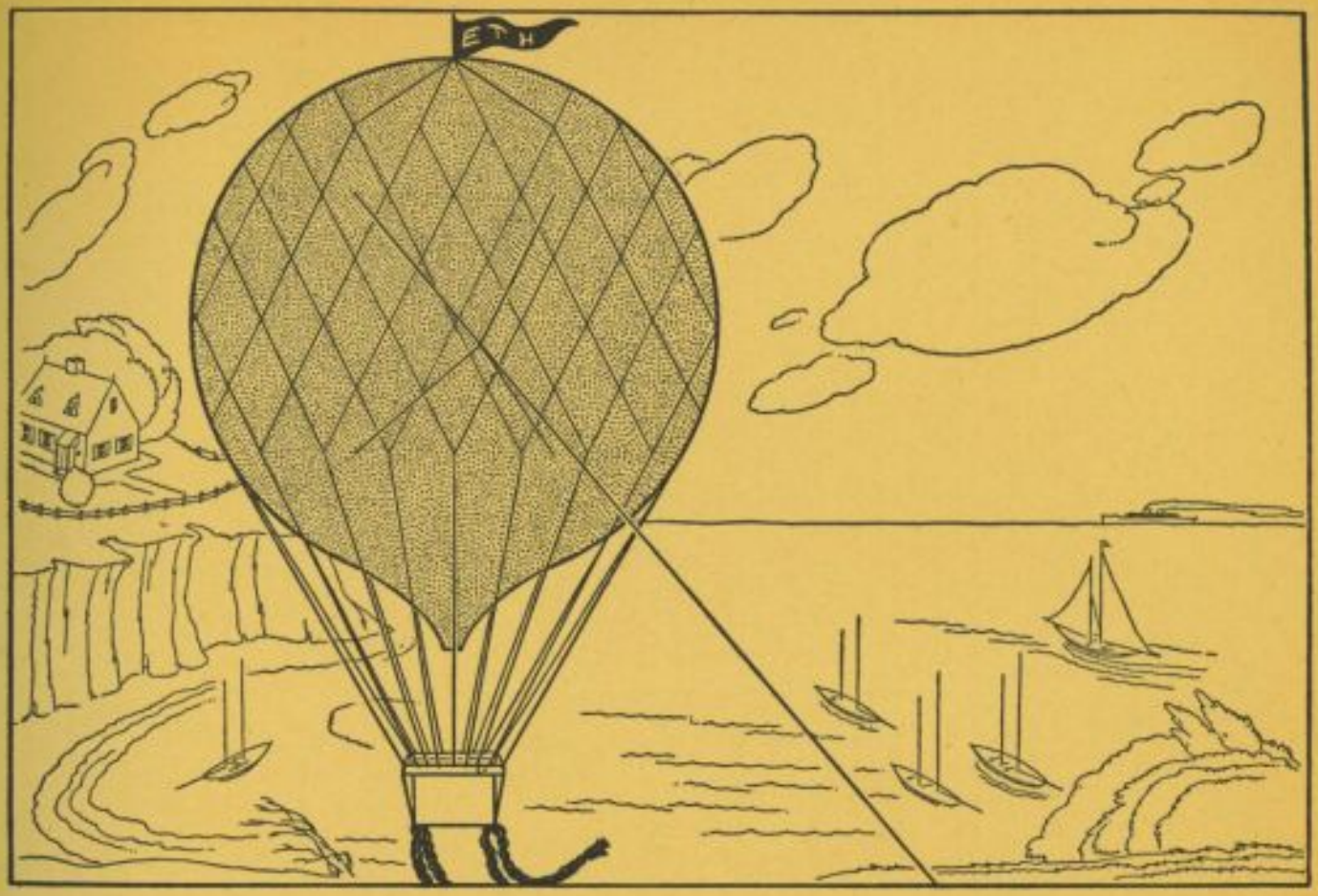


Balloon Kite

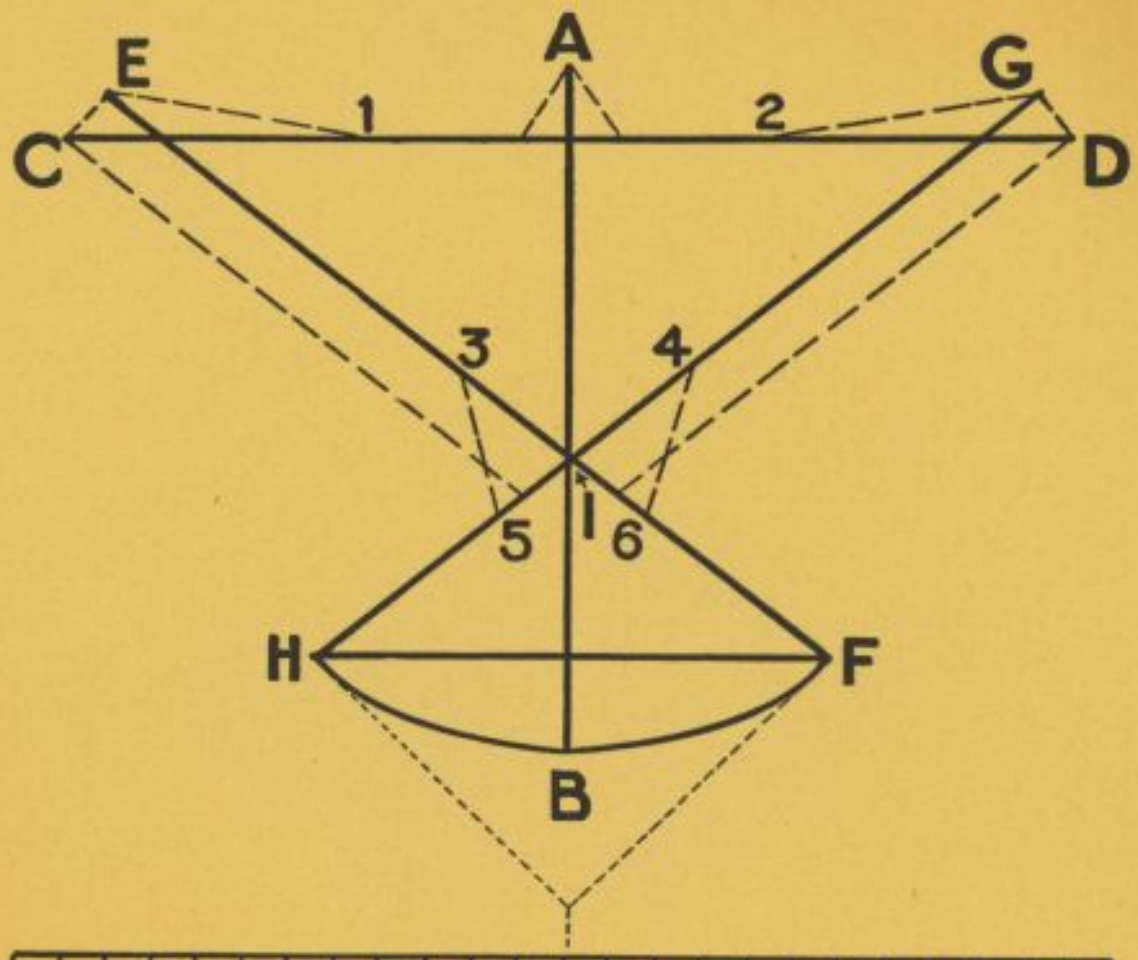
Frame Sticks All sticks are ¼″ square. The spine sticks "E-H" and "F-I" are 30″ long, while the cross sticks "A-B" and "C-D" are 28″ long. The stick "E-F" is 12″ long, while the short one at "G" is 1″ long. Sandpaper all these to size and balance them carefully. (See Page 4 "Frame Sticks").

Joints Place "E-H" and "F-I" parallel to each other and 12″ apart. Center "A-B" on them 7″ below "H" and "I". Glue and lash it in place. Stick "C-D" is centered on the same sticks 7″ above "E" and "F". Bind in place. Bind "E-F" at the lower ends of "E-H" and "I-F", as shown. A ⅛″ split bamboo outline is spliced and bent in a 32″ diameter circle, as shown. Its ends are curved down 5″ below "E-F" and glued and lashed to stick "G", which must come in the exact center of the stick "E-F". It is then fastened to ends "E", "C","A","H","I","B", "D" and "F". (See Page 4 "Joints").

Covering Lay out the circle with its elongated end on the covering paper. Rule in the net lines in heavy black lines. Cover the frame in the usual manner.

Tail To obtain the proper effect for our balloon kite, a small berry box is suspended under the frame by strings. These are attached at even intervals along "C-D" and brought down to the sides of the box, as shown. Four braided tails are then attached to the corners of the box. Tests should be made with the box to determine whether it is too heavy or not. If it is found that the box weighs too much, the same form may be built up with sticks. (See Page 6 "Kite Tails").

Bridle The bridle consists of two strings each as long as the distance "1-2-3". One is attached at "1" and "3", while the other is fastened at "2" and "4". They are gathered together in the center and the flying string attached at that point. (See Page 7 "Bridles").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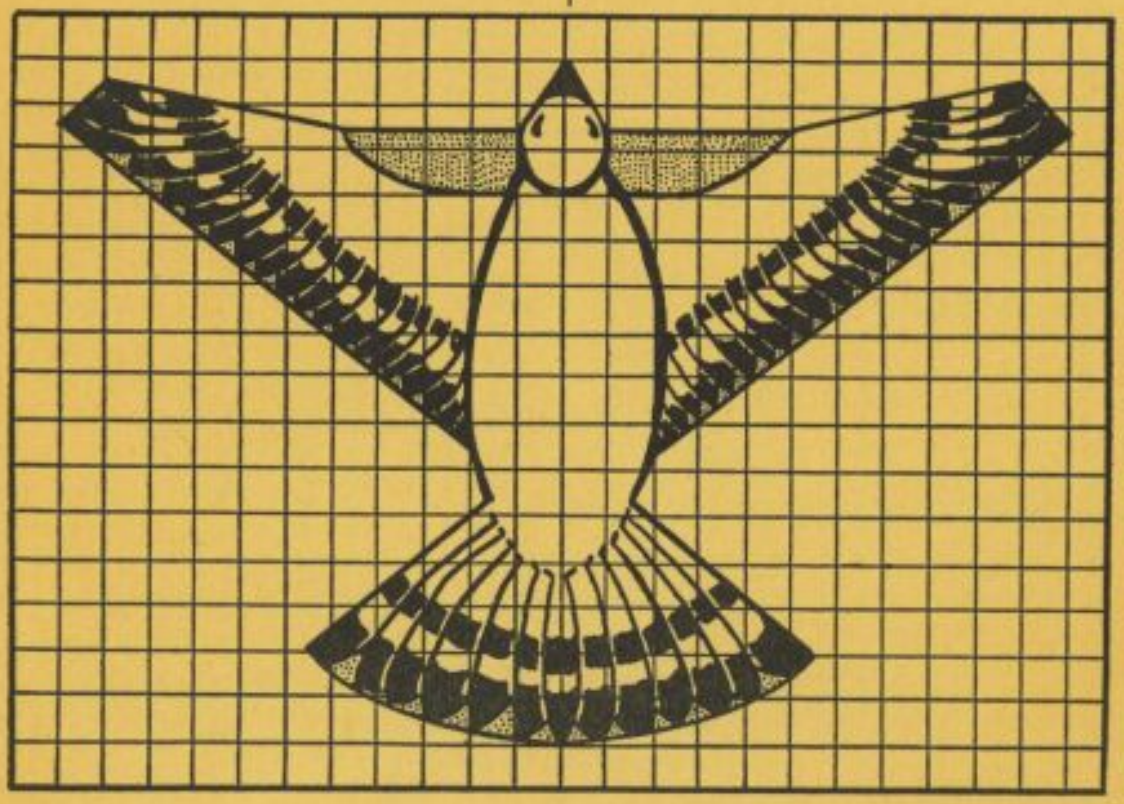


Bird Kite

Frame Sticks All sticks are ¼″ square. Spine stick "A-B" is 30″ long. Stick "C-D" is 44″ long and "H-F" is 22″ long. Sticks "E-F" and "H-G" are 40″ long. Sand and balance. (See Page 4 "Frame Sticks").

Joints Center "C-D" on "A-B" 3″ below "A" and glue and bind in place at right angles. Center "H-F" on "A-B" 4″ above "B". Mark point "I" on "A-B" 13″ from point "B". Bind the end of "H-G" to point "H". Bind the end of "E-F" to point "F". Cross them at point "I" and bind to "A-B". Bind them to "C-D", where they cross this stick, as shown. Bend a length of ⅛″ split bamboo and bind it to "H-F" and "A-B" at points "H","B", and "F". (See Page 4 "Joints").

Outline String Attachments Start strings from points "C" and "D" and run them parallel to "E-F" and "G-H" down to these sticks below point "I" and end them. Run strings from "C" and "D" through "E" and "G" and end them on "C-D" at points "1" and "2", which are 9″ on each side of "A-B". Run a string from a point 2″ from "A-B" on "C-D" up to "A" and down to a point 2″ on the other side of "A-B" on "C-D". Run a string from "3", which is 6″ from point "I", to point "5", which is 4″ from point "I". Duplicate this on the other side of "A-B", as shown by "4-6". (See Page 5 "Outline String Attachments").

Painting Draw the full-size bird on the covering paper. Paint dotted parts blue. Paint all black parts in black and leave the white ones white.

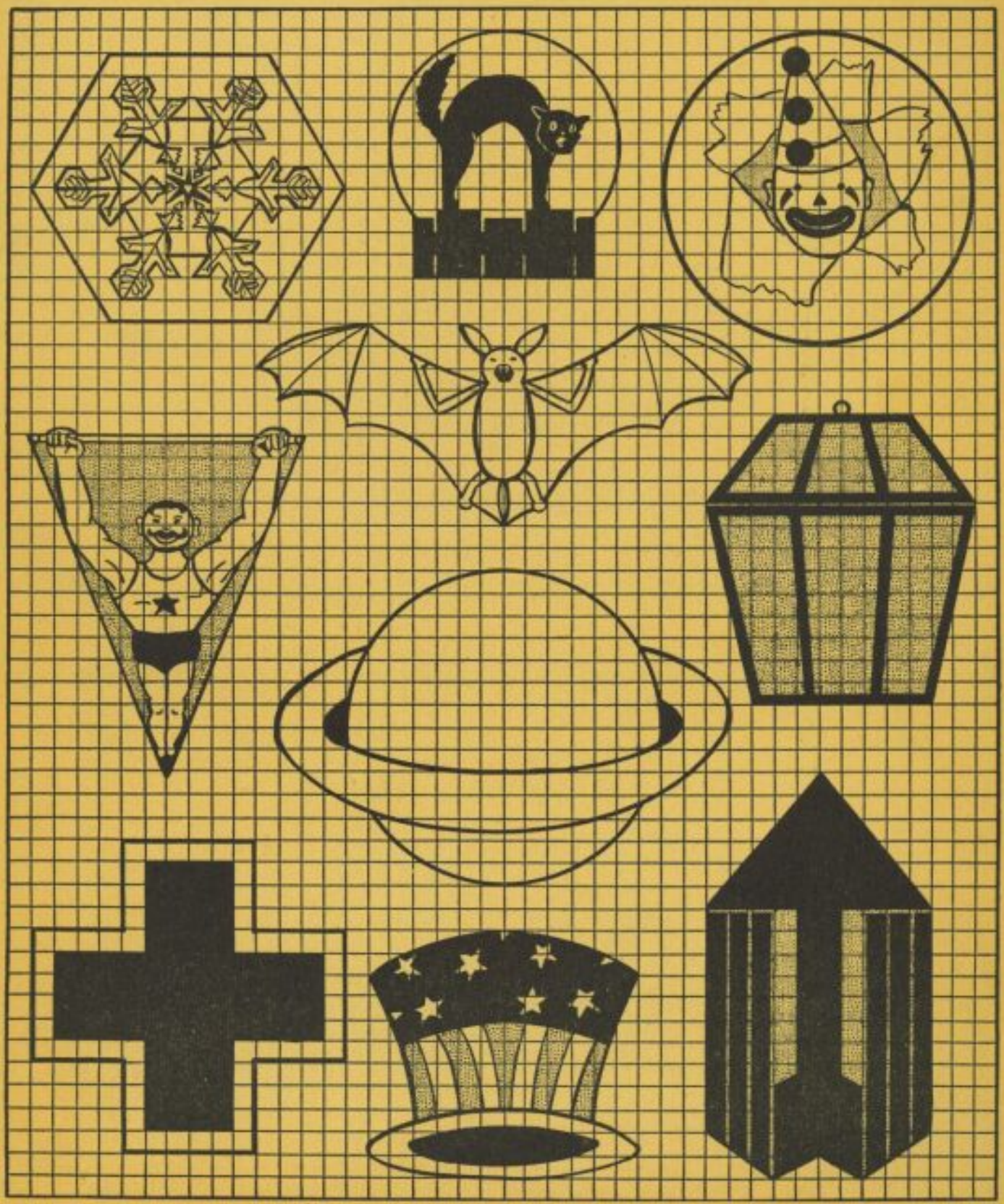
Covering Cover the kite frame with the spine stick down.

Bridle Cut two strings as long as "C-D-F". Fasten one at "C" and "F" and the other at "D" and "H". Tie the flying string in the center 8″ below "A".

Tail Run a bridle from "H" and "F" and tie a paper bow tail in its center.

Ten Kite Designs You Can Build

Here are ten designs for new kites that anyone already completing those in this book can easily build. All are shown on 2″ squares. Proper frames can be designed for the various shapes. Painting, covering, bridling and flying can be followed from the instructions given for kites of similar shapes throughout the book.



My Kite Record

Use this chart to keep a complete record of the various kites you design, build and fly. By keeping such a record, you will soon know the types of kites that give the best performances; the kind of day on which they fly the highest; and the conditions under which flights are made. Keep up-to-date with the kite world!

DATE	NAME OF KITE	WEATHER	PERFORMANCE		CHANGES MADE	REMARKS
			POOR	GOOD		

30 KITES THAT FLY

with plans for construction

by EDWIN T. HAMILTON