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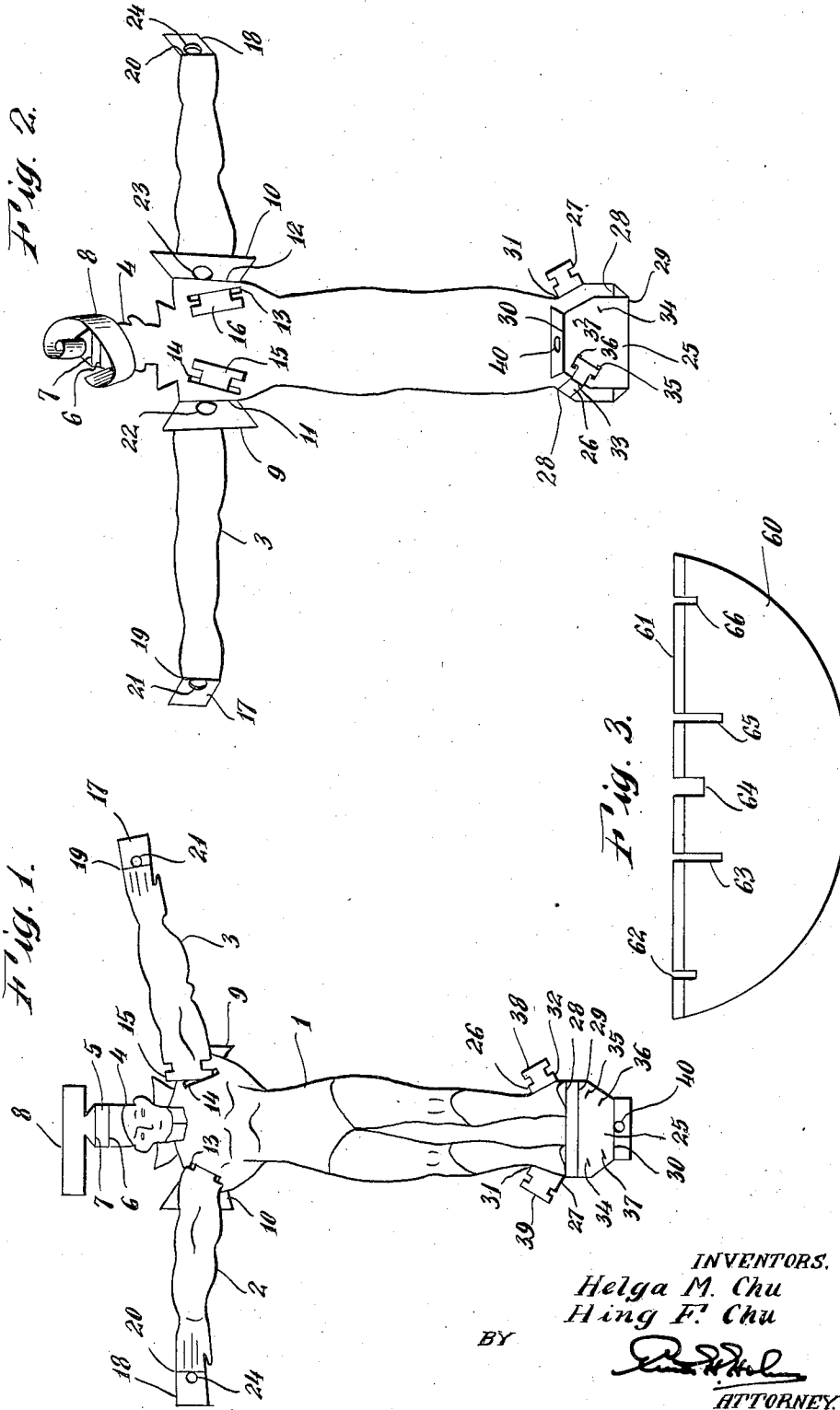
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FRAME CONSTRUCTION FOR KITES AND LIKE TOYS

Filed Nov. 14, 1947

2 Sheets-Sheet 1



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FRAME CONSTRUCTION FOR KITES AND LIKE TOYS

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2 Sheets-Sheet 2

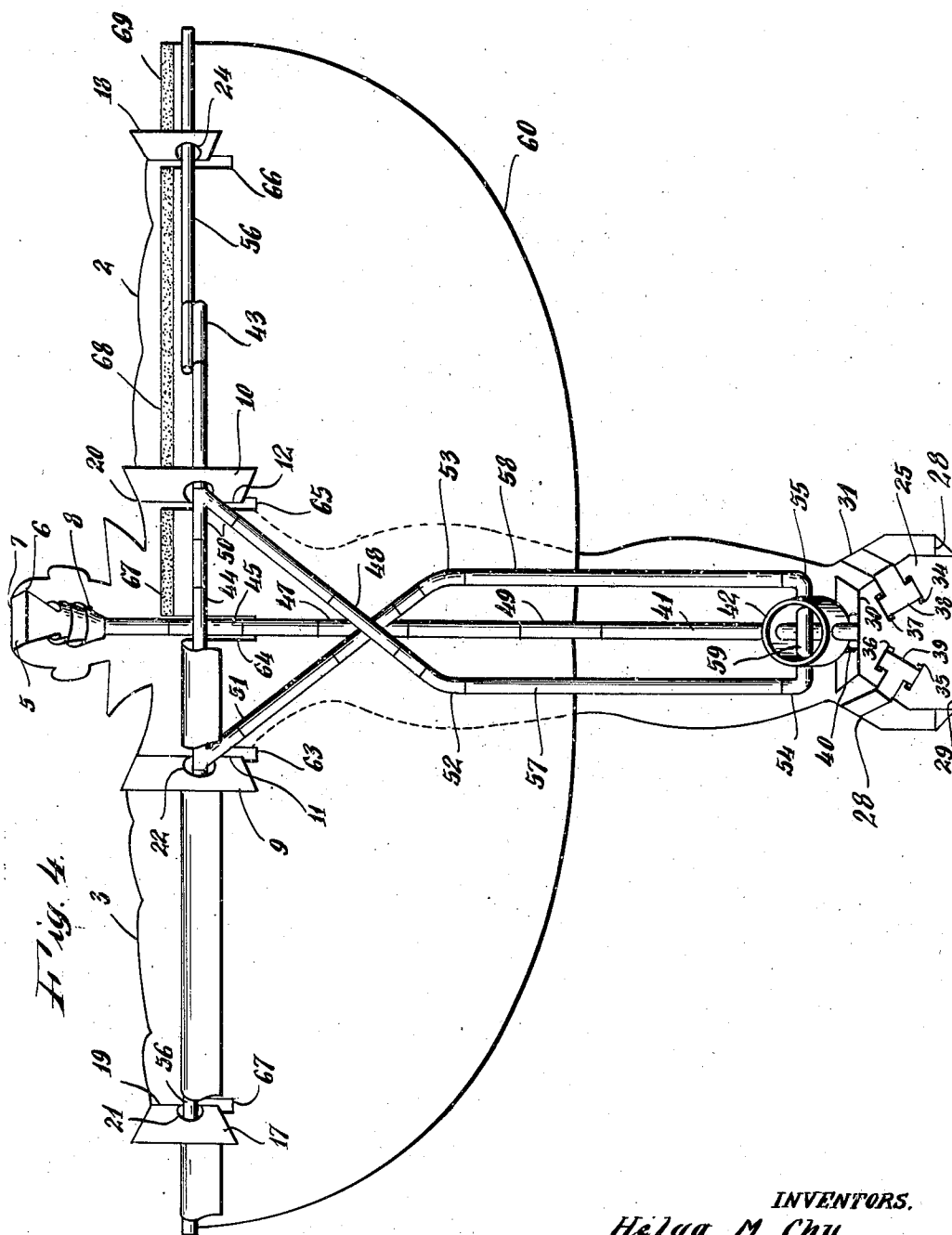


Fig. 4.

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FRAME CONSTRUCTION FOR KITES
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Our invention relates to a frame construction for kites and like toys, and more particularly to certain improvements in the structure of the frame, whereby various sizes and lengths of materials may be assembled and securely fastened together to constitute a sturdy knock-down kite or toy aerial construction.

It is an object of our invention to provide sectional parts that may be united by tubular jointed connections to form a complete reinforced frame structure especially adapted to support a specially prepared surface covering material to be secured thereto.

It is an object of our invention to provide sectional rods, bars or sticks of predetermined length in sets together with simple tubular connections and with tubular angular connections for joining the sectional sticks to form a reinforced frame structure.

It is also an object of our invention to provide a centrally located sheet material portion having laterally projecting parts, said portion and parts having means on the extremities thereof for attachment to the outermost ends of the sticks.

It is a further object of our invention to provide the top of the central portion with a gummed scroll for securing said top to the upper end of one stick and to provide a bottom portion of folded sheet material having overlapping interconnected flaps forming a hollow box-like portion having an apertured wall adapted to receive and locate the lower end of the same stick centrally thereof, said laterally projecting parts having angularly arranged flaps on its outer extremities thereof, said central portion also having angularly arranged flaps thereon, all of said flaps having apertures therein arranged in alignment with each other to receive a stick arranged transversely of the central axis of said central portion and parallel to both said laterally projecting parts.

It is also an object of our invention to provide a cover or facing comprising the principal airfoil of our kite or aerial toy, said cover may comprise a semicircle or less than a semicircle having one substantially straight edged portion having notches suitably formed therein to straddle the flaps and the upper portion of the upright central stick, the area on one side along the free edges of the notched portion being gummed whereby the straight edged and notched portion may be folded about the transverse stick and cemented to itself below said stick.

It is also an object of our invention to produce a three unit novel assemblage comprising a novel aerial toy.

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It is a further object of our invention to provide kits or packages, including in each kit a complete toy in knock-down or unassembled condition, together with such simple directions as may be necessary to assemble and operate our new toy. Furthermore, we contemplate making the new aerial toy in different sizes, such as large, small and intermediate sizes, etc.

Other objects and advantages will be revealed in the detailed description of our invention.

In the drawings:

Figure 1 is a front elevational view of a blank of sheet material having attachable and detachable sheet material projections extending laterally therefrom.

Figure 2 is a rear elevational view of the blank partly folded at its lower portion and showing the securing scroll on its upper end.

Figure 3 is an elevational view of a facing portion or principal airfoil portion constituting a preformed segment of a circle ready for assemblage to our kite frame construction.

Figure 4 is a rear elevational view of our kite substantially in completed form except that portions of the principal airfoil have not yet been cemented as clearly indicated on the right hand half of this figure.

The drawings, as shown, are merely illustrative of one embodiment of our invention and not definitive thereof except as set forth in the claimed subject matter.

The reference characters identify the parts and portions of our invention as depicted in our drawings and as specified in our written description thereof.

The three-part blank comprising the body 1 having the attachable and detachable extensions, arms or wings 2 and 3 constitutes the initial unit or layout of our kite construction. This initial layout constitutes suitable sheet material, such as suitable cloth, good quality cardboard, good quality pasteboard, multiple layer Bristol board, or any suitable plastic or resinous sheet material, such as, "Charmour," "Sundora," "Cellulate," etc., all comprising cellulose acetate sheet material. The initial unit or layout may have the form in outline resembling a human being having outstretched arms and this layout constitutes a minor airfoil.

The head 4 is provided with an extension 5 having creased bending lines 6 and 7 and a scroll or coil piece 8 adapted to be wound about and secured to the upper end of the central stick 41 by the use of suitable gummed surfaces or cement (not shown). The extension 5 is folded over the

upper end of the stick 41 and the scroll 8 is wound around the end of the stick 41 back of the head portion 4, as clearly shown in Figure 4.

The shoulders of the body 1 are provided with flaps 9 and 10 flexed to the rear at an obtuse angle about the creased bending lines 11 and 12. The shoulder portions are also provided with slots 13 and 14 to receive the T-end fasteners 15 and 16 on the arms 2 and 3. The T-end fasteners are preferably integral with the arms.

The extremities of the arms 2 and 3 are also provided with flaps 17 and 18 flexed rearwardly along creased bending lines 19 and 20.

The flaps 9, 10, 17 and 18 are provided with apertures 21, 22, 23 and 24, all arranged substantially in alignment with each other to receive a transversely arranged stick 56.

The lower end of the body 1 is provided with a depending extension 25 and two lateral extensions 26 and 27. All the extensions are provided with creased folding lines 28, 29, 30, 31, 32 and 33. The depending extension 25 is provided with slits 34, 35, 36 and 37 to receive the tips of the T-end fasteners 38 and 39. The extensions are folded and fastened as indicated at the lower ends of Figures 2 and 4. Cemented or gummed fastenings may be used in addition to the mechanical fasteners or in lieu of our mechanical fasteners throughout our sheet material construction.

Now that our sheet material, minor airfoil, has been substantially completed, the upright stick 41 is inserted through the apertured ring 42 and into the aperture 40 of the flap 25 as clearly shown in Figure 4. The upper end of the stick 41 is received in the head extension 5 and the scroll 8 is coiled about the upper end of the stick 41 and is secured in place by cement or the use of gummed surface portions (not shown).

All the sticks are sectional and are united by tubular connectors some of which are double and straight as 43, some are single and straight as 44, 45, 46, 47, 48 and 49, some are Y-shaped as 50 and 51, two are obtuse angles as 52 and 53, and two are right angled elbows as 54 and 55. The connectors may be made of any suitable material such as aluminum alloy, or suitable plastic material, such as casean plastics, cast phenolic, cellulose acetate, laminated phenolic, "Phenolite" or "Synthane," laminated phenolic aldehyde resins, "Lucite," "Lumarith," etc.

The transverse stick 56 is arranged to extend through the aligned apertures of the flaps 9, 10, 17 and 18 and extends a suitable distance beyond the flaps 17 and 18, as clearly shown in Figure 4. The sticks 57 and 58 may be designated trussing sticks or they may be designated as reinforced cantilever sticks since their lower ends are secured and connected and extend through the ring 42. The sticks 57 and 58 extend from the Y-connections 50 and 51 across each other and the upright stick 41, and continue to the angular connections 52 and 53 and thence downwardly, parallel to each other and to the upright central stick, and terminate in the elbow connections 54 and 55 secured or anchored in the ring 42.

The anchor ring 42 may be made of aluminum alloy or of any suitable plastic material like that above mentioned in connection with the tubular connections.

The double tubular connection 43 has this advantage, that you can readily discover how much of a stick section has been inserted in the connector without the use of prearranged marks on the stick sections. Of course, if the connectors are made of transparent or nearly transparent

plastic material, then the amount of a stick section inserted could be readily seen.

The stick sections are made preferably of light strong wood, such as, bamboo or any other light but strong wood may be selected. It is also contemplated that the sticks may be made of light but strong tubular plastic material, such as mentioned above in connection with the tubular connectors. The stick 41 and the connection 59 for the elbows 54 and 55 are secured together or otherwise fastened to prevent lateral shifting of the elbows with reference to the ring 42.

In making the frame construction, we contemplate making it as light as possible commensurate with the strength required to maintain our aerial toy in its required shape even in a strong wind.

The folded box-like tail piece 25, the ring 42 and all the other parts and portions engaging the same provide sufficient weight in the lower portion of the kite to aid in maintaining its balance during its flight.

The major airfoil 60 is of semicircular contour or may even be less than a semicircle in size or area and is made preferably of suitable sheet material such as thin but light and strong cardboard or pasteboard and it may be made of any of the plastic materials mentioned in connection with the sheet material of the body 1. The straight or upper edge portion 61 of the airfoil 60 is provided with notches or recesses 62, 63, 64, 65 and 66 to straddle the flaps 9, 10, 17 and 18 and the stick 41, as clearly shown in Figure 4. The airfoil 60 is provided with gummed portions 67, 68 and 69 along its upper edge, as shown to the right of Figure 4.

The airfoil 60 is inserted between the frame construction and the minor airfoil body 1 and the flaps and stick 41 are received by the notches. The straight edge portions are accurately folded over the stick 56 and accurately secured about the stick 56 by the gummed portions 67, 68 and 69 which adhere to the rear surface portion of the airfoil 60.

Every unit must be accurately assembled to maintain the balance required for a steady and sustained flight.

The three string sections (not shown) are secured to the outer ends of stick 56 and to the lower end of stick 41, respectively. The three string sections are connected to the main kite string also (not shown).

It can now be readily understood that we have produced a three unit novel aerial toy comprising: first, a minor airfoil body unit 1 of sheet material; secondly, a frame construction unit comprising united stick sections amply braced and reinforced in a particular manner by the employment of particular means for securing the sections together and in proper place; and third, we have provided a major airfoil unit secured between the other units as previously described and displayed on our drawings.

From the foregoing description of the frame construction for kites and like toys, the method of making same and the application thereof to use will be readily understood and it will be seen that we have provided a comparatively simple, inexpensive and efficient means for carrying out the various objects of our invention.

While we have particularly described the elements best adapted to perform the functions set forth, it is apparent that various changes in form, proportion and in the minor details of construction may be resorted to, without departing from

the spirit or sacrificing any of the principles of the invention.

Having thus described our invention, what we claim is:

1. An aerial toy comprising a cross-shaped minor airfoil having front and rear surfaces, a supporting frame, and a major airfoil, said frame being disposed against the minor airfoil on the rear surface thereof and having upper and lower end portions secured to the minor airfoil, said major airfoil being substantially semicircular in contour and having its straight edge portion secured to the upper end portion of the frame, and said major airfoil being located between the frame and the minor airfoil.

2. A kite comprising major and minor airfoils and a frame, said frame being disposed against the rear surface portion of the minor airfoil and having upper and lower end portions secured to the minor airfoil, and said major airfoil being secured to the upper end portion of said frame and located between said minor airfoil and frame.

3. The construction set forth in claim 2 in which the minor airfoil is provided with a plurality of flaps extending rearwardly from the rear surface portion thereof, each of said flaps having an apertured portion, said apertures being in alignment with each other and receiving a transversely extending portion of said frame.

4. The construction set forth in claim 2, in which said frame resembles a cross in general contour, said frame having a transversely extending stick adjacent its upper portion, said major airfoil being secured along its upper edge to said transverse stick.

5. The construction set forth in claim 2, in which said minor airfoil resembles a human figure in general contour with outstretched arms, said frame representing a cross in general contour and including an upright stick and a cross stick, said frame being located substantially within the contour of said figure except that the ends of the cross stick project beyond the ends of the arms.

6. A kite comprising a cross-shaped minor airfoil and a substantially semicircular major airfoil in combination with a substantially cross-shaped frame secured to the rear surface of said minor airfoil, said frame comprising an upright stick and a transversely arranged stick adjacent the upper end portion of said upright stick, said minor airfoil having an upper end forming a head portion and a lower end forming a foot portion and laterally extending side arms, said head portion receiving the upper end of said upright stick, said foot portion receiving the lower end of said upright stick the transversely arranged stick being disposed along the side arms and connected therewith and means for centering the ends of said upright stick on said head portion and in said foot portion, said major airfoil having portions of its straight edge folded over said transversely arranged stick and cemented to said minor airfoil below said transversely arranged stick.

7. The construction set forth in claim 6, in which said frame is provided with a pair of reinforced cantilever sticks and tubular Y-shaped

connectors securing the cantilever sticks to said transversely arranged stick, said pair of sticks comprising companion sections and angular tubular connectors, said pair of sticks crossing each other and said upright stick at the same point, a pair of tubular elbows at lower ends of the pair of sticks connected with each other by a tube extending across the upright stick, a ring having two pairs of diametrically arranged and equally spaced apertures, one pair of apertures receiving the lower portion of said upright stick and the other pair of apertures receiving the tube connecting the elbows, said tube being secured in position to prevent shifting relative to said ring and relative to said upright stick.

8. The construction set forth in claim 6, in which said head portion of the minor airfoil carries a scroll integral therewith, said scroll being wound about the upper end portion of the upright stick and adheringly secured to the upright stick and to the head portion of the minor airfoil.

9. In the construction set forth in claim 6, tongues carried by said minor airfoil and folded to form a box-like foot portion, fasteners integral with said tongues and holding the tongues in the folded condition, said box-like foot including an upper wall portion having an aperture therein through which the lower end portion of said upright stick passes.

10. The construction set forth in claim 6, in which the minor airfoil is provided with two pairs of rearwardly projecting flaps, said flaps having aligned apertures through which said transversely arranged stick passes, the major airfoil being formed with notches in which said flaps and the upright stick fit.

11. In an aerial toy, a substructure including a substantially semicircular major airfoil, said airfoil having its straight edge notched and thereby divided into spaced portions adapted to be folded about a stick, each of said spaced portions having gummed areas on one side thereof.

12. A kite construction comprising a body of sheet material constituting a minor airfoil, a frame secured to and supporting the minor airfoil said frame being located back of said minor airfoil, and including an upright stick extending longitudinally of the minor airfoil and a transversely extending stick, a substantially semicircular major airfoil of sheet material located between said frame and minor airfoil, said major airfoil having portions along its straight edge secured about the transversely extending stick of said frame.

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