

May 17, 1960

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2,937,062

PORTABLE KNOCK-DOWN DISPLAY ASSEMBLY

Filed Aug. 1, 1956

3 Sheets-Sheet 1

FIG. 1

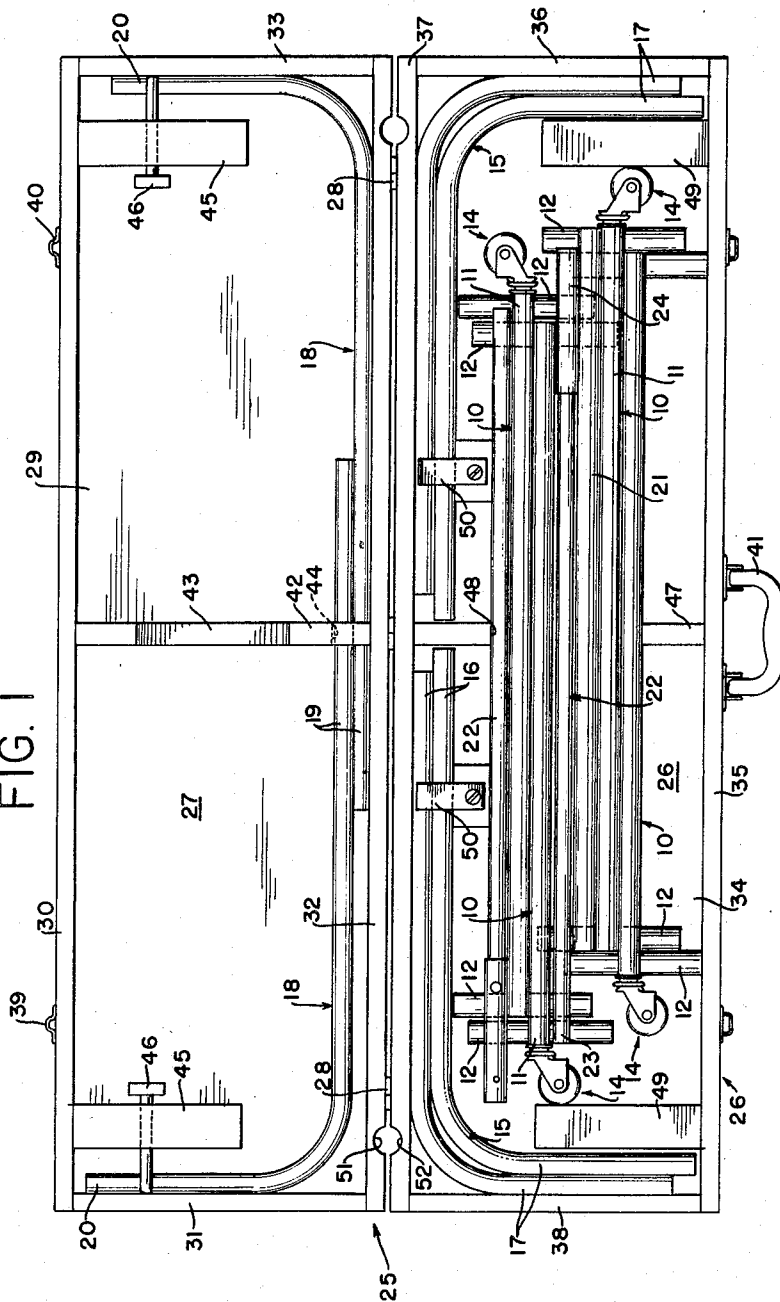
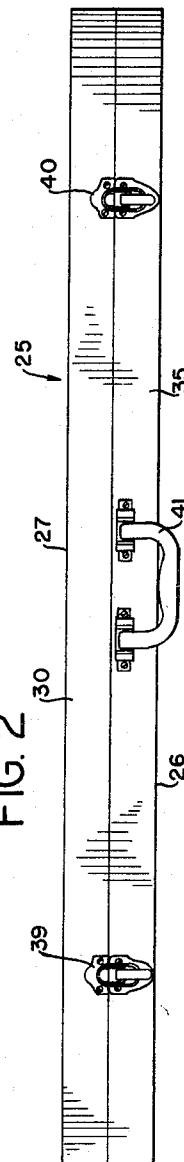


FIG. 2



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FIG. 3

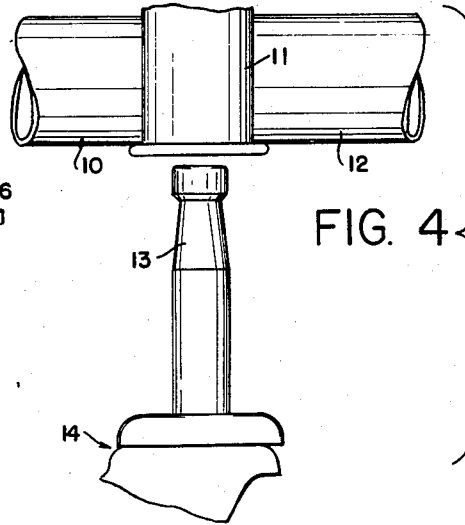
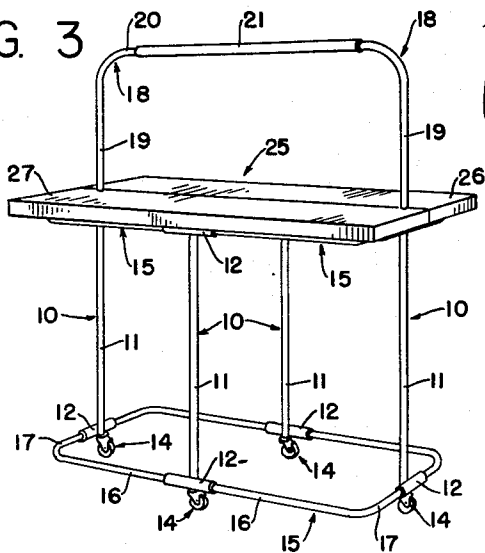


FIG. 4

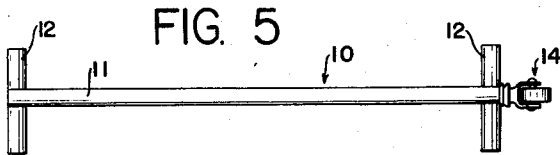


FIG. 5

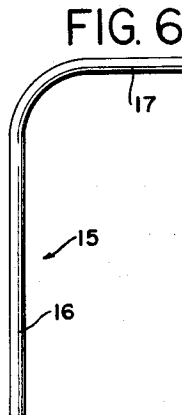


FIG. 6

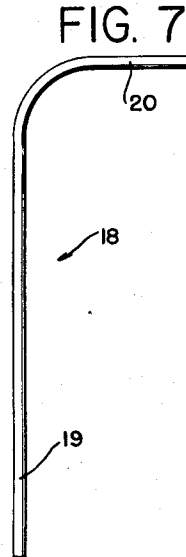


FIG. 7

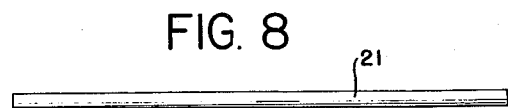


FIG. 8



FIG. 9

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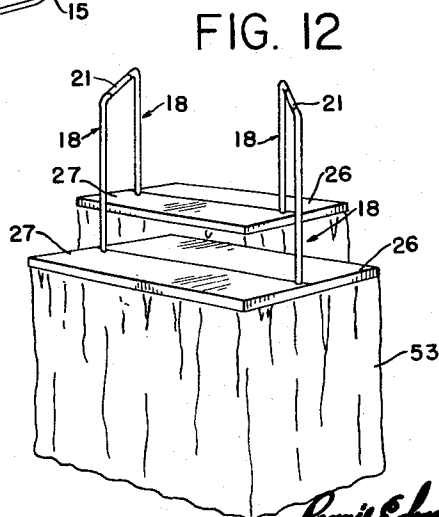
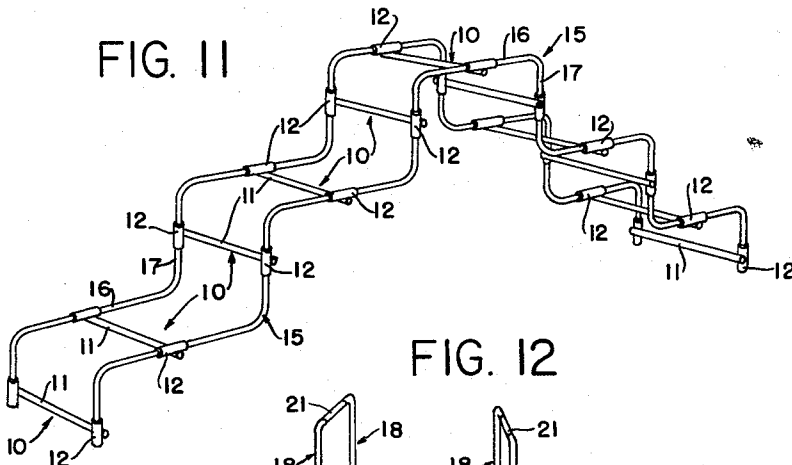
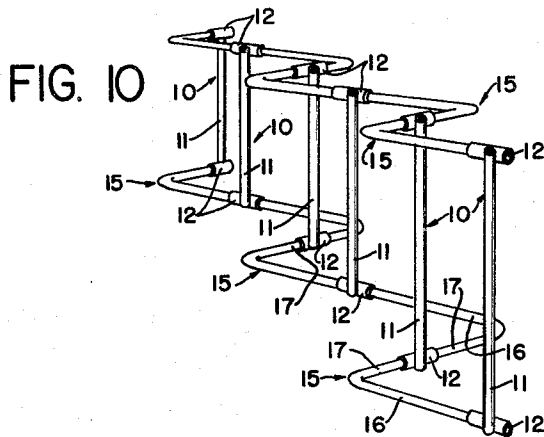
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PORTABLE KNOCK-DOWN DISPLAY ASSEMBLY

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3 Sheets-Sheet 3



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PORTABLE KNOCK-DOWN DISPLAY ASSEMBLY

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Application August 1, 1956, Serial No. 601,420

5 Claims. (Cl. 311—35)

The present invention relates to portable structures and more particularly to a novel and improved portable knock-down structure which may be utilized as a table or display assembly, for example.

Although the apparatus of the present invention has other uses, it is primarily intended for use as a display table, stand or related structure. To this end the invention provides a novel and improved structure which may be compactly stored and carried about in a small portable case, and quickly and easily assembled at a selected site.

One of the specific features of the invention resides in the provision of a portable knock-down display structure comprising a plurality of like structural elements of novel design, which may be quickly and easily assembled in a variety of ways to form a table, display stand or related structure. In this respect, the new structure comprises a plurality of I-shaped tubular structural elements having transversely disposed tubular connectors at each end. In combination with the I-shaped elements are L-shaped structural elements adapted to be received in and secured by the tubular connectors. The arrangement is such that a variety of structures may be formed by properly assembling the different types of elements.

Another novel and advantageous feature of the invention resides in the provision of an improved portable knock-down structure, including a compact, lightweight carrying case adapted to function in one capacity as a carrier for the various structural elements and in another capacity as a table top or other element of an erected structure. More specifically, the carrying case comprises two half sections, hinged together and adapted when fully open to form a table top or other flat surface. The separate hinged parts of the case are provided with semi-circular recesses which, when the case is fully open, form cylindrical openings for the reception of tubular structural elements.

For a better understanding of the invention, reference should be made to the following detailed specification and accompanying drawings, in which:

Fig. 1 is a top plan view of an open carrying case with a plurality of structural elements packed therein, all as constructed and arranged in accordance with the present invention;

Fig. 2 is a top plan view of the carrying case in a closed condition;

Fig. 3 is a perspective view of a display table constructed in accordance with the invention;

Fig. 4 is an enlarged fragmentary view of one of the structural elements incorporated in the new structure, illustrating the manner in which castors may be assembled therewith;

Figs. 5-9 are plan views of various structural elements used in the new structure;

Fig. 10 is a perspective view of a novel guard rail formed with the new structural apparatus;

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Fig. 11 is a perspective view of a novel step display stand formed with the new structural apparatus; and

Fig. 12 is a perspective view illustrating a novel manner in which a pair of tables of the type shown in Fig. 3 may be assembled together.

Referring now to the drawing, the numeral 10 (Fig. 5) designates an I-shaped structural element forming an important component of the new structure. The I-shaped element 10 comprises an elongated section 11 of lightweight tubular material, such as magnesium, aluminum alloy, or the like. At each end of the tubular section 11 is a short tubular connector 12. The connectors 12 are rigidly secured to the principal tubular sections 11, in transversely disposed relation thereto. In the preferred form of the invention, both ends of the elongated tubular section 11 are open, and in one end is inserted the shank 13 of a swivel castor 14 (Fig. 4). Advantageously, the castors 14 are readily removable from the tubular section 11, substantially in the manner indicated in Fig. 4.

It is presently contemplated that the structure of the invention will be arranged in kit form, in which event each kit will include four I-shaped structural elements 10, of the type shown in Fig. 5. Each such structural element will be provided with a castor 14.

A second basic component of the new structure is illustrated in Fig. 6. The second component is an L-shaped element 15, formed of lightweight tubular material. Advantageously, the L-shaped elements 15 have long and short leg portions 16, 17, respectively. The diameter of the tubular material used in forming the L-shaped elements 15 is approximately equal to the inside diameter of the tubular stock used in forming the short tubular connectors 12 of the I-shaped elements 10.

In accordance with the invention, the ends of the L-shaped members 15 are adapted to be telescopically received in the short tubular connectors 12. Preferably, the respective components are so arranged that upon telescopic assembly thereof the parts will be frictionally engaged. Alternatively, suitable fastening devices such as clamps or screws may be provided for locking the various components in assembled relation. The standard kit will include eight of the L-shaped elements 15.

The above-described structural components 10, 15 form the heart of my new apparatus. However, for certain preferred assemblies, additional components are desired. Thus, in Fig. 7 there is shown an L-shaped auxiliary component 18, having long and short leg portions 19, 20, respectively. The auxiliary L-shaped element 18 has an outside diameter approximately equal to the inside diameter of the tubular section 11 of the I-shaped component 10, and is adapted for telescopic reception therein. In the contemplated structural kit, two such auxiliary L-shaped elements 18 will be provided.

In Fig. 8, there is shown an auxiliary straight tubular section 21. This element is of the same size as the tubular section 11 of the I-shaped elements 10, and is adapted for telescopic interconnection with the auxiliary L-shaped elements 18. In the contemplated kit, one auxiliary tubular element 21 will be provided.

In Fig. 9 is shown an auxiliary extension element 22 comprising an elongated tubular portion 23 and a short tubular connector 24 at one end. The main tubular portion 23 of the extension element 22 has an outside diameter approximately equal to the inside diameter of the tubular section 11 of the I-shaped element 10, and is adapted for telescopic reception therein. The short connector 24 is of the same size as the tubular section 11, and is adapted to telescopically receive an end of the auxiliary L-shaped member 18. Two of the extension elements 22 will be provided in the standard kit.

Referring now to Figs. 1 and 2, the numeral 25 designates a carrying case forming part of the standard structural kit and comprising two similar half sections 26, 27 connected together along one edge by means of hinges 28. The carrying case may be formed of a suitable lightweight wood, or a light metal, such as magnesium or aluminum, for example.

As shown in Fig. 1, the top section 27 of the case comprises a relatively large wall 29 surrounded by marginal walls 30—33. The marginal walls are relatively low, and preferably of a height slightly less than the thickness of one of the I-shaped structural elements 10. The main wall 34 and marginal walls 35—38 of the other half section 26 of the case have substantially the same dimensions as the first half section, so that the sections 26, 27 are substantially symmetrical, at least exteriorly.

On the outer marginal edge walls 30, 35 are suitable latches 39, 40, which may be of conventional design and are adapted to secure the hinged half sections 26, 27 together to close the case. In addition, one of the sections, i.e., section 26 in the illustrated apparatus, has a carrying handle 41 of conventional form.

In the illustrated form of the invention, the case half 27 has a dividing wall 42, located substantially centrally between its ends. The dividing wall 42 has an elongated upwardly facing recess 43 in its upper surface and a small recess 44 at its inner end. The small recess 44 is of sufficient size to receive the end portions of a pair of auxiliary L-shaped elements 18. The auxiliary elements are arranged in flat relation to the main wall 29, with their long leg portions 19 extending through the recess 44 in overlapped relation. The short legs 20 of the auxiliary L-shaped elements 18 are pointed outwardly from the inner marginal wall 32 and lie against the marginal end walls 31, 33.

To retain the auxiliary L-shaped elements 18 in place in the case section 27, blocks 45 are mounted in the case section, in spaced relation to the marginal end walls 31, 33. The blocks 45 confine the short ends 20 of the auxiliary elements and mount retractable retaining pins 46. The pins 46 are adapted when in the position shown in Fig. 1, to lock the auxiliary element 18 in place, so that the case section 27 may be conveniently closed over the top of the opposite section 26. The elements 18 may be readily removed, however, by retracting the pins 46.

In the lower case section 26, there is a dividing wall 47 having an upwardly opening recess 48 complementary to the recess 43 of the dividing wall 42. Received in the recess 48 are four I-shaped structural elements 10, two auxiliary extension elements 22 and a straight tubular auxiliary element 21. As will be observed in Fig. 1, the elements 10, 21, 22 are disposed longitudinally of the carrying case 25, and the I-shaped elements 10 are arranged in staggered relation so that the transversely disposed connectors 12 thereof do not interfere. Advantageously, the dimensions of the recesses 48, 43 are such that the above-named elements are closely received therein, the arrangement being such that when the case is closed and locked the various named elements are held in place by the dividing walls 42, 47.

Also received in the casing section 26 are eight L-shaped structural elements 15, arranged in nested pairs, with their longer leg portions 16 disposed along the inner marginal wall 37. The primary L-shaped elements 15 are held in place by means of blocks 49, adjacent the marginal end walls 36, 38, and by rotatable tongues 50 adapted to be moved into overlying relation to the leg portions 16 of the elements.

The apparatus as shown in Fig. 1 constitutes a complete structural kit, which may be used in forming a display table, for example, of the type shown in Fig. 3. To this end, the I-shaped structural elements 10, with or without the castors 14, are arranged in vertical relation and employed as legs. The primary L-shaped elements 15 are telescopically applied to the transverse connectors 12,

with the elements 15 being disposed in horizontal planes. The I-shaped elements or legs 10 are thus held in vertically disposed and spaced relation by a series of L-shaped elements connecting the tops and bottoms of the I-shaped elements. The L-shaped elements are retained in engagement with the connectors 12 by friction or by suitable clamps. In either case, the tubular framework formed is rigid and sturdy.

To form a top for the display table of Fig. 3, the carrying case 25 is opened flat and placed in inverted relation on the upper tier of L-shaped elements 15.

For display purposes, it is sometimes desirable to provide the table with a display board frame. To this end, the auxiliary L-shaped elements may be assembled with the I-shaped elements 10 at the ends of the table. In the apparatus illustrated in Fig. 3, the longer leg portions of the auxiliary elements 18 are inserted in the upper ends of the end legs 10 of the table. The shorter leg portions of the auxiliary element 18 are directed toward each other and are connected by the straight tubular auxiliary member 21. If a display board frame of greater height is desired, the extension elements 22 may be assembled with the auxiliary L-shaped elements 18, the small diameter ends of the extension elements being received in the upper ends of the end legs 10 of the table.

In accordance with the invention, the inner marginal walls 32, 37 of the carrying case are provided with opposed pairs of semi-circular recesses 51, 52 which, when the case parts are opened flat, form cylindrical openings, substantially as shown in Fig. 1. When the open case is employed as a table top, in the manner indicated in Fig. 3, the cylindrical openings are aligned with the end legs 10, so that the auxiliary L-shaped element 18 or extension elements 20 may be received in the openings for assembly with the I-shaped leg elements 10.

If the display table is to be placed against a wall, for example, it may be desirable to assemble only a half-table structure, utilizing only end legs and a front leg. The back side of the structure is placed against a wall; and the hinged case parts 26, 27 are disconnected, so that one part may be laid flat on the half-table structure, while the other part is disposed vertically against the wall to form a display back-board.

In Fig. 10, the new structural apparatus is arranged in the form of a novel guard rail. In this form of the invention, a plurality of I-shaped elements are arranged in vertically disposed relation, forming spaced legs. Adjacent pairs of legs 10 are connected by pairs of L-shaped elements 15 telescopically received and frictionally or otherwise retained in the transversely disposed connectors 12. Alternate pairs of the L-shaped elements 15 are arranged in opposed relation, so that in the assembled guard rail the vertical I-shaped leg members 10 are aligned, while the rails formed by the L-shaped elements are in saw tooth form. The saw-tooth arrangement of the lower rail is advantageous in that it renders the entire guard rail structure stable and self-supporting.

In Fig. 11, a plurality of I-shaped elements 10 and L-shaped elements 15 are assembled to form a step display stand. In this form of the invention, the I-shaped elements are arranged in horizontally disposed relation, with adjacent I-shaped elements 10 being connected by pairs of L-shaped elements 15. The illustrated display stand is formed of two symmetrical sections, and in each section alternate pairs of the L-shaped elements 15 are arranged in opposed relation, much in the same manner as in the guard rail structure of Fig. 10. The two symmetrical sections are connected together at the center by means of an I-shaped element 10, in the manner illustrated in Fig. 11.

At the opposite ends of the display stand are horizontally disposed I-shaped members 10, the connector elements 12 of which project downwardly and act as legs to support the structure.

In Fig. 12, a pair of display tables of the type gen-

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erally shown in Fig. 3 are connected together in tandem. To this end, the auxiliary elements 18, 21 are assembled with corresponding vertical I-shaped leg elements of each table. If desired, skirts 53 (not part of the regular kit) may be attached to the table tops to conceal the frame structure.

Of course, the new structural apparatus may be arranged in a multitude of ways, of which the foregoing are merely exemplary. One of the outstanding advantages of the new apparatus is its wide versatility. The basic components may be quickly and easily assembled and taken apart without tools or special skills, and the assembled structures are rigid and durable. When the apparatus is arranged in kit form, it is ideally suited for short term sales displays, for example, since the entire kit is lightweight and compact, and may be easily carried about from place to place and quickly assembled at a display site.

An important aspect of the invention resides in the use of the I-shaped tubular structural elements 10 in combination with the L-shaped elements 15. These components may be assembled in a variety of ways by simply telescopically applying the L-shaped elements 15 into the transverse tubular connectors 12 of the I-shaped elements.

It should be understood that the specific apparatus herein shown and described is intended to be illustrative only, as certain changes may be made therein without departing from the clear teachings of the invention. Reference should therefore be made to the following appended claims in determining the full scope of the invention.

I claim:

1. A portable knock-down table assembly comprising a plurality of leg members disposed in vertical relation, each of said leg members having a tubular cross bar connector rigidly secured thereto in external engagement, one adjacent the upper and one adjacent the lower end thereof and extending in horizontal relation, said cross bar connectors extending a short distance on each side of said leg members, and a plurality of L-shaped structural members adapted to be telescopically received at one end in a cross bar connector of one leg member and at the other end in a corresponding cross bar connector of another leg member, each of said leg members being connected at its upper and lower end portions by said L-shaped members to an adjacent pair of leg members, and a table top member, said upper L-shaped members constituting the support for the table top member.

2. The portable knock-down table of claim 1, in which

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said table top member comprises a hinged carrying case for said leg and L-shaped members consisting of two parts hinged together along a common edge, said carrying case having a length not less than that of the said support and a width when hinged open not less than that of the said support.

3. The portable knock-down table of claim 2, further including structural elements adapted to be telescopically engaged with certain leg members at the opposite ends of said table, and further characterized by said carrying case having two hinged parts of substantially equal size, each of said hinged parts having spaced recesses therein on its hinged edge, said recesses being arranged in opposed pairs and being adapted when said case is hinged open to form openings for receiving said structural elements.

4. A portable knock-down display structure comprising a plurality of I-shaped and substantially rigid elongated tubular elements of substantially equal size, each of said I-shaped tubular elements having a relatively short tubular cross-bar adjacent each end but not at said end, said cross-bars being in non-planar arrangement with said tubular element and externally connected thereto and imparting said I-shape, and a plurality of one-piece L-shaped tubular elements of uniform lateral dimension directly and telescopically connected at their opposite ends to the cross-bars of said I-shaped tubular elements.

5. The portable knock-down display structure of claim 4 further characterized by said elongated tubular elements being disposed in vertical relation to form legs, and said L-shaped tubular elements being disposed in horizontal planes.

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