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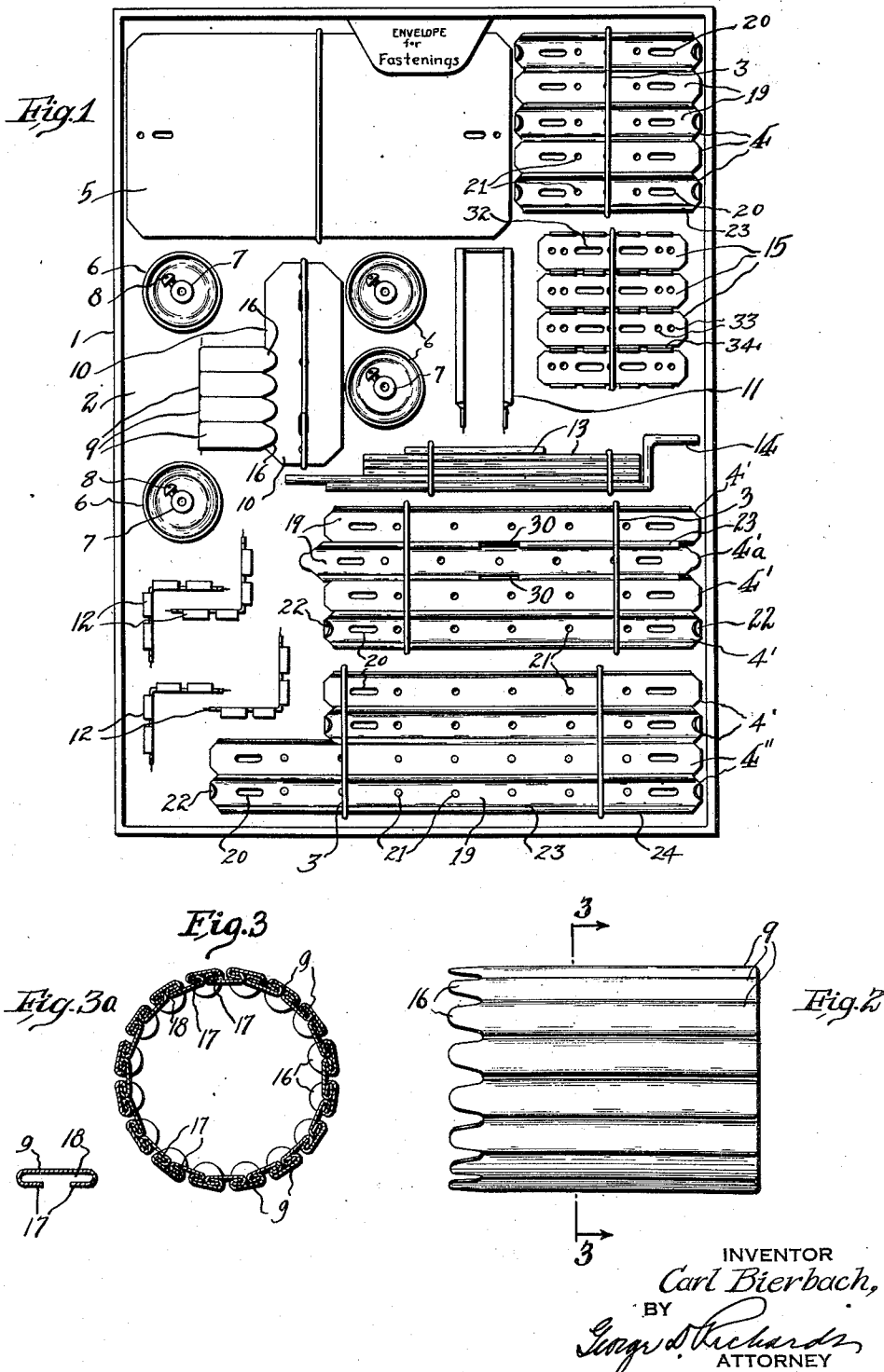
C. BIERBACH

2,014,464

CONSTRUCTION TOY

Filed July 14, 1934

3 Sheets-Sheet 1



Sept. 17, 1935.

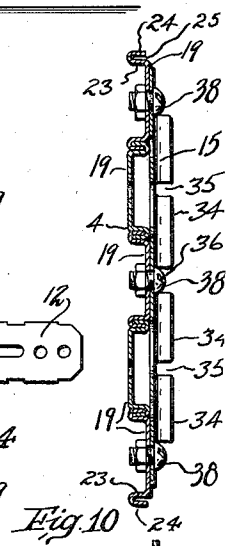
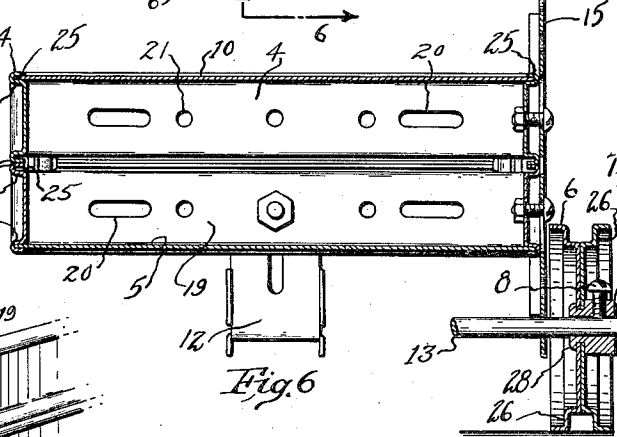
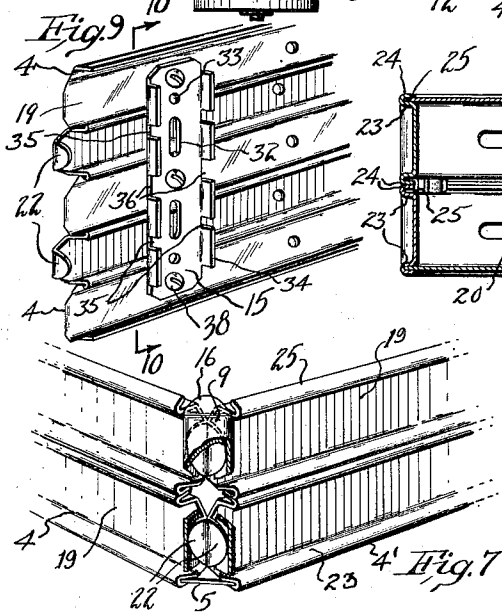
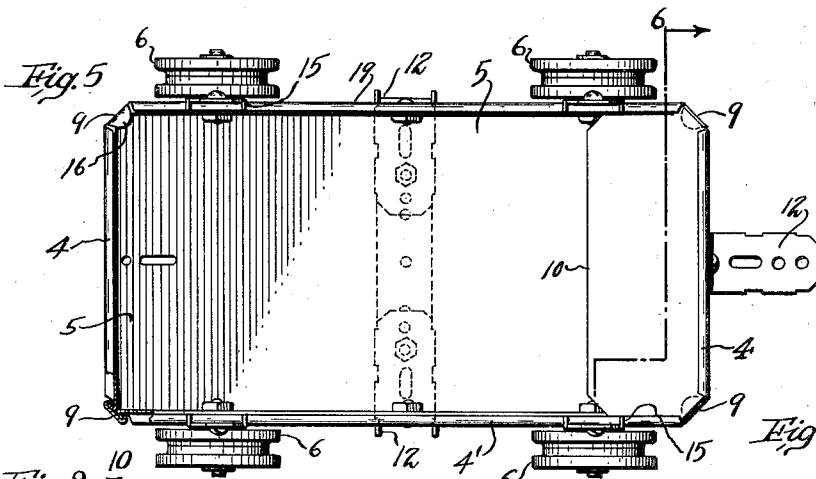
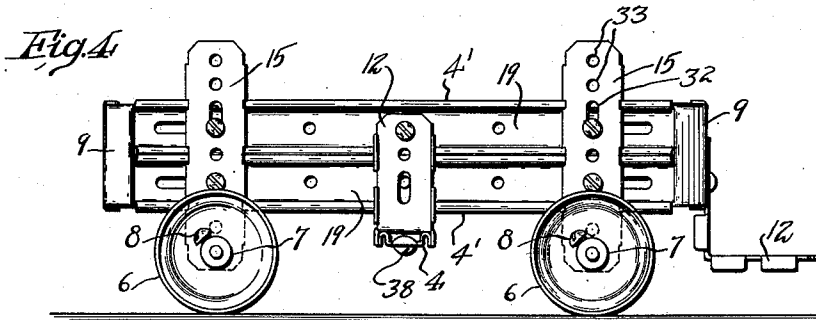
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3 Sheets-Sheet 2



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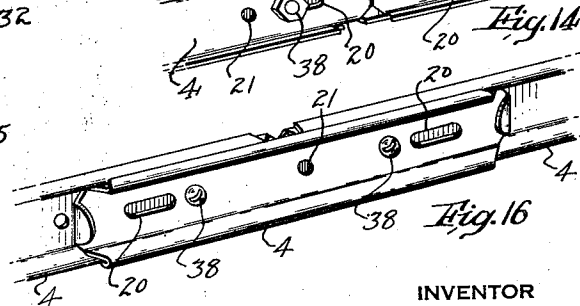
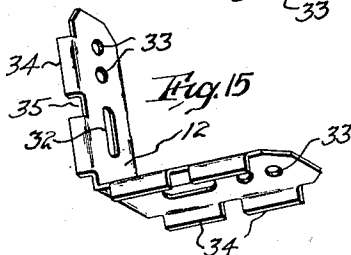
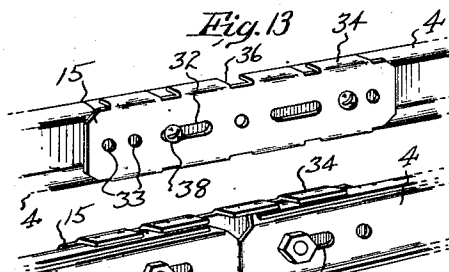
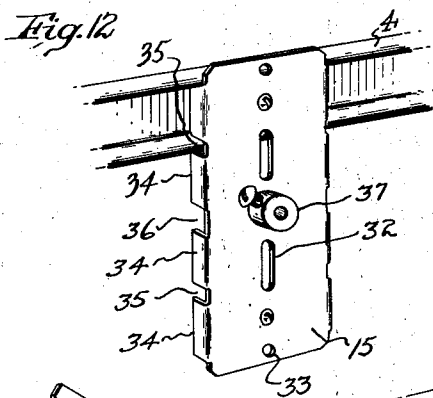
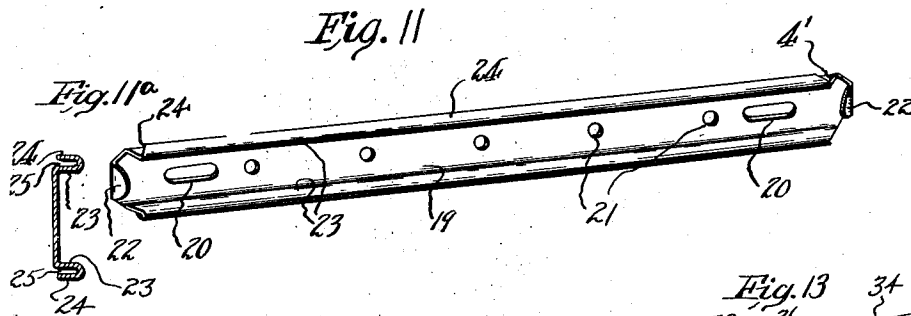
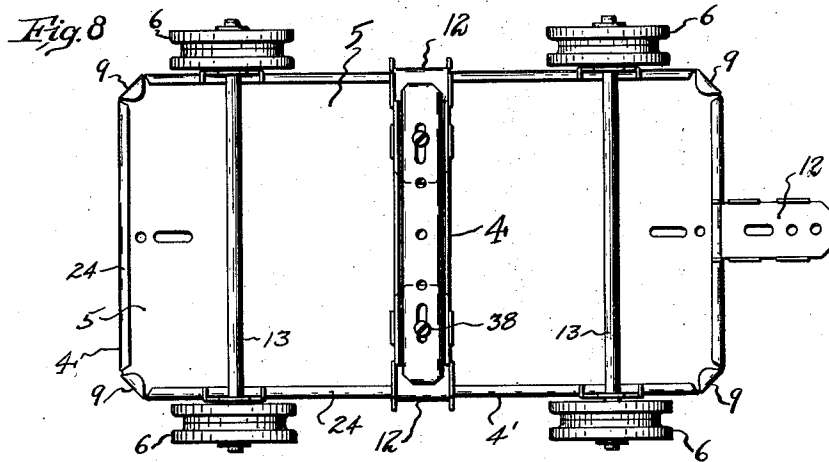
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CONSTRUCTION TOY

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3 Sheets-Sheet 3



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CONSTRUCTION TOY

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Application July 14, 1934, Serial No. 735,137

6 Claims. (Cl. 46—37)

This invention relates, generally, to instructive toys and the invention has reference, more particularly, to a novel construction toy adapted to be sold as toy sets, each such set containing a number of construction elements of various kinds which may be assembled in various combinations to form a large number of different models, the models usually simulating various actual mechanical structures.

The toy is featured by having its various construction elements or parts capable of being readily assembled and detached, so that a variety of different models or toys may be easily made from a set of such elements, the said models so made serving to simulate actual working devices so that the toy becomes an instrument of instruction as well as an enjoyable plaything. It will, of course, be observed that the toy sets may be more economically made the fewer the number of different parts which must be supplied with each one, that is, the more models that can be made from parts of the same character the cheaper the price of the set. It is then a considerable advantage to have various parts interchangeable and adapted for use in various relations and positions, for even if a greater number or more duplication of such parts is required, it will still be more economical than to supply the same number of different elements.

The principal object of this invention is to provide construction elements susceptible of a variety of uses, whereby the number of different parts in a toy of this type is reduced to a minimum.

Another object of this invention lies in the provision of a number of construction elements or parts which may be secured together in various relations to form different toy structures or units thereof.

Still another object of this invention is to provide a toy building element or strip which is adapted to be joined transversely or longitudinally to other similar building elements to thereby form composite structures of various widths and lengths.

Other objects of this invention, not at this time more particularly enumerated, will be clearly understood from the following detailed description of the same.

The invention is clearly illustrated in the accompanying drawings, in which:

Fig. 1 is a plan view of a toy set embodying the principles of the present invention, the set being mounted in a container having its cover removed;

Fig. 2 is a view in elevation of a hollow cylin-

dric object made up of connection pieces or elements;

Fig. 3 is a sectional view taken along line 3—3 of Fig. 2, and Fig. 3a shows a connection piece in section;

Fig. 4 is a view in elevation of a typical toy made up from construction elements shown in Fig. 1 of the drawings;

Fig. 5 is a plan view partly broken away of the structure of Fig. 4;

Fig. 6 is a sectional view taken along the line 6—6 of Fig. 5 looking in the direction of the arrows;

Fig. 7 is a fragmentary perspective view with parts broken away of a portion of the toy shown in Fig. 4;

Fig. 8 is a view looking up at the bottom of the structure shown in Fig. 4;

Fig. 9 is a perspective fragmentary view illustrating a manner of assembling certain of the construction elements;

Fig. 10 is a sectional view taken along line 10—10 of Fig. 9;

Fig. 11 is a perspective view of one of the strip construction elements and Fig. 11a shows a section thereof;

Fig. 12 is a fragmentary perspective view illustrating the manner of attaching a straddle piece to a strip construction element.

Figs. 13 and 14 are perspective views of opposite sides of a structure illustrating two strip construction elements interconnected by a straddle piece.

Fig. 15 is a perspective view of a bracket member; and

Fig. 16 shows two strip construction elements interconnected by similar third strip construction element.

Similar characters of reference are employed in said views to indicate corresponding parts.

Referring now to Fig. 1 of the drawings the reference numeral 1 designates a container or carton having a partition 2 of cardboard or other suitable material therein to which partition is attached the several construction elements forming a simple toy set embodying the principles of the present invention. Certain of the construction elements of the set are attached to the partition 2 as by means of elastic threads or cords 3 while other of the elements or parts are mounted in conforming slits or cuts provided in the partition 2.

These construction elements are illustrated as including longitudinal strip elements 4, 4' and 4''. The elements 4' and 4'' though similar to

the elements 4 are longer than the elements 4'. A panel 5 and pressed metal wheels 6 having hubs 7 provided with set screws 8 are also included. Additional construction elements include the connection pieces 9, a small panel 10, a U-shaped member 11, straddle pieces 15, brackets 12, rods or pins 13 of various lengths and a crank pin 14.

The connection pieces 9 may be of various lengths as especially shown in Figs. 1 to 3. These connection pieces each comprise a flat longitudinally extending back or main portion having tabs 16 provided at its ends, the said tabs 16 being adapted to be folded or turned at right angles to the back portion, as illustrated in Figs. 1 to 3, wherein the tab 16 at one end of each connection piece is so turned. The connection piece back portion is provided at its side edges with folded over flanges 17, the two said flanges extending parallel to the back portion though spaced somewhat therefrom to provide a receiving recess 18, said flanges 17 lying in a common plane, there being a central longitudinally extending space or opening between the opposed edges of flanges 17 communicating with recess 18 for accommodating cooperating construction elements as will appear from an inspection of Fig. 3. Thus, for example, these connection pieces may be assembled by sliding adjacent pieces longitudinally with respect to one another so that the flange 17 of one enters the recess 18 of another to form a cylindrical member of any desired diameter, the latter dimension depending upon the number of connection pieces used.

The longitudinal strip element 4 comprises a longitudinally extending web 19 (see Figs. 1 and 11) that is provided near its ends with longitudinal slots 20 and is provided intermediate these slots 20 with a plurality of apertures 21. Thus, the elements 4 have three of these apertures 21, the elements 4' have five of such apertures and the elements 4'' have seven of such apertures, the difference in the number of apertures being due to the greater lengths of members 4' and 4''. The ends of the web 19 are provided with tabs 22 which are turned into overlying relation with respect to the web 19, the angle between the tabs 22 and the web being preferably 45°. If desired, certain of the elements 4, 4' or 4'' may be supplied with the tabs 22 extending directly from the ends of the web 19 and lying in the plane of the web as shown at 4'a in Fig. 1. Flanges 23 extending at right angles to web 19, are formed integrally with the side edges of this web and have folded or doubled over portions 24 that extend parallel to the respective flanges and are spaced slightly therefrom thereby providing a space 25 for receiving cooperating elements as especially shown in Figs. 6 and 10. The doubled over portions 24 serve to greatly strengthen the flanges 23 thereby correspondingly strengthening the strip elements 4. The strip element 4'a (see Fig. 1) has its flanges 23 cut away in the region of the mid-length of this member as indicated at 30.

The pressed metal wheels 6 (see Fig. 6) are illustrated as made up of two oppositely pressed disks 26 which are fixed upon a reduced beaded portion 28 of the hub 7. The wheels 6 are adapted to be mounted on any of the shafts or rods 13 and 14 by merely sliding these rods through the apertures of hubs 7. By then tightening set screws 8, the wheels may be located in any positions desired on the rods 13.

The U-shaped member 11 is very similar to the strip element 4'a, the said member 11 being adapted to be formed from strip element 4'a by

merely bending the web 19 of this strip element transversely at two points i. e. at the ends of the cut out portions 30 of flanges 23. This U-shaped member 11 is especially useful in forming the free ends of booms, cranes, derricks and etc.

The straddle pieces 15 (see Figs. 1, 4 and 9) each comprise a flat substantially rectangular main portion having central longitudinally disposed slots 32 and circular apertures 33 therein. Two circular apertures 33 are located near each end of the piece 15 and one such aperture midway of the length of this piece, while two slots 32 are employed, the same being intermediate the central and outer apertures 33. The main portion of the piece 15 is provided at its side edges with upstanding flanges 34 the said flanges have cut out portions 35 near their ends and somewhat larger cut out portions 36 midway of their lengths. If desired, certain of the straddle pieces 15 may be provided with a bearing or hub 37 that is similar to the hub 7 of the wheels 6, the aperture of the bearing or hub 7 being positioned so as to coincide with the central aperture 33 (see Fig. 12).

The straddle pieces 15 may be put to various uses as illustrated in Figs. 9, 10, 13 and 14. In Figs. 9 and 10, by use of fastening elements or screw bolts 38, a straddle piece 15 is used to retain a plurality of transversely abutting and interengaging strip elements 4 in assembled relation. In Figs. 13 and 14 the piece or element 15 is used to secure two longitudinally abutting strip pieces 4 together by use of fasteners 38. In Fig. 16 one strip piece 4 is used for a similar purpose, thereby illustrating the interchangeability of parts. Figs. 4 and 12 illustrate how the flanges 34 fit snugly into the channel like recesses of strip members 4, thereby facilitating the rigid holding of the connected strip pieces by the straddle pieces.

The brackets 12 (see Fig. 15) are very similar to the straddle pieces 15 and may be formed from the same blanks as these straddle pieces. The brackets 12 are bent along a transverse line midway of their lengths into a right angled shape and the mid-length circular aperture 33 of straddle members 15 are omitted in the brackets 12. The brackets 12 may be used for many purposes, two such uses being illustrated in Figs. 4 and 5 of the drawings. In these figures the brackets 12 are used in conjunction with a strip element 4 to stiffen the body of the cart shown and as a coupling for use in pulling the cart.

It will be noted that in Figs. 4, 5 and 7 the connection pieces 9 are used to form the corners of the body of the cart, these connection pieces being pushed downwardly so that tabs 22 of elements 4 and 4' enter and are firmly retained within recesses 18 of the connection pieces, thereby rigidly holding the parts in assembled relation. The lower tabs 16 of the connection pieces are then turned inwardly, thereby locking the connection pieces in place and preventing their endwise displacement. When it is desired to disassemble the cart, the lower tabs 16 may again be straightened i. e. turned to a vertical position so as to lie in the plane of the main body or back of the connection pieces, whereupon the connection pieces may be slid upwardly and off of the tabs 22. Figs. 4 to 6 illustrate one manner of using the panels 5 and 10 the said panels being held at their peripheral edges in the receiving spaces 25 of the strip elements 4 and 4'.

It will be noted that all of the parts of the toy set, with the exception of rods 13 and 14, are

pressed from sheet metal and that several parts namely 4'a and 11, 12 and 15 are substantial duplicates, thereby enabling the set to be produced cheaply.

5 As many changes could be made in the above construction and many apparently widely different embodiments of this invention could be made without departing from the scope thereof, as defined by the following claims, it is intended that all
10 matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

I claim:

15 1. A toy set composed of a plurality of elements, said elements comprising, strip pieces having webs reinforced with flanges, said webs having tabs at their ends, said tabs extending at angles of less than ninety degrees with respect to said webs,
20 and connection pieces for interconnecting said strip pieces, said connection pieces having flat back portions and folded over flanges provided at the side edges of said back portions, said folded over flanges being spaced from said back portions
25 for the reception of the tabs of said strip pieces therebetween.

2. A toy set composed of a plurality of elements said elements comprising, strip pieces having webs reinforced with flanges, said webs having fastener
30 apertures therein, and straddle pieces for use in building said strip pieces up into structures of multiple strip widths, said straddle pieces having substantially flat apertured main portions provided with flanges at their side edges, said main
35 portion flanges having cut out portions to enable such flanges to fit between the flanges of said strip pieces.

3. A toy set composed of a plurality of elements, said elements comprising, strip pieces having webs
40 reinforced with flanges having doubled over portions, said webs having tabs at their ends extend-

ing at angles of less than ninety degrees with said webs, pieces for interconnecting said strip pieces to form built up structures, and brackets for use in completing such built up structures, said
5 brackets comprising an angle shaped main portion having flanges at its edges, said main portion flanges having cut out portions to enable such flanges to fit between the flanges of said strip pieces.

4. A toy set composed of a plurality of elements, 10 one of said elements comprising a strip piece having a web, forwardly projecting flanges provided at the side edges of said web, each of said flanges being formed with a doubled over portion spaced from the main portion of the flange, thereby pro- 15
viding a receiving recess extending throughout the length of the flange and open at the rear of said strip piece.

5. A toy set composed of a plurality of elements, one of said elements comprising a strip piece hav- 20
ing a web provided with fastener apertures therein, flanges provided at the side edges of said web, each of said flanges being formed with a doubled over portion exteriorly spaced from the main portion of the flange and lying without the margins 25
of said web, thereby providing a receiving recess extending throughout the length of the flange, and tabs provided on the ends of said web.

6. A toy set composed of a plurality of elements, one of said elements comprising a strip piece hav- 30
ing a web, flanges provided at the side edges of said web, each of said flanges being formed with a doubled over portion spaced from the main portion of the flange, thereby providing a receiving recess extending throughout the length of the 35
flange, and tabs provided on the ends of said web, said tabs being turned into overlying relation to said web at an angle of substantially forty-five degrees thereto.

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