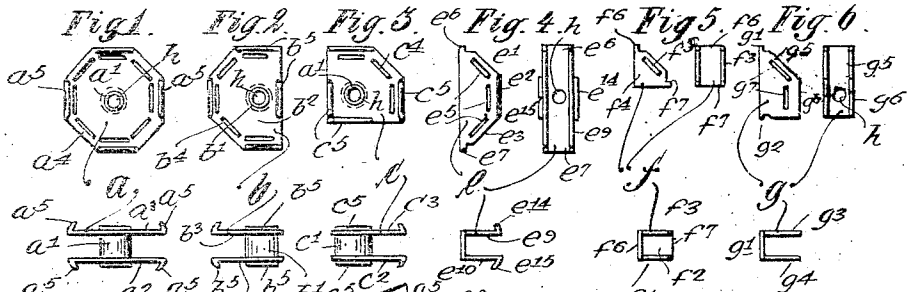
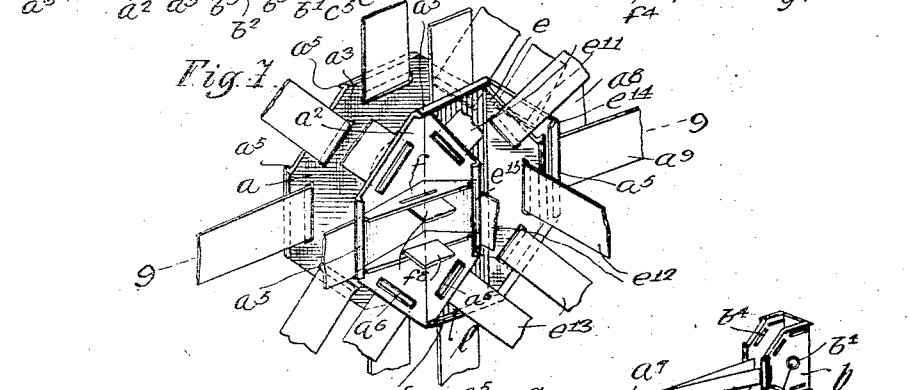
A. RICHTER.

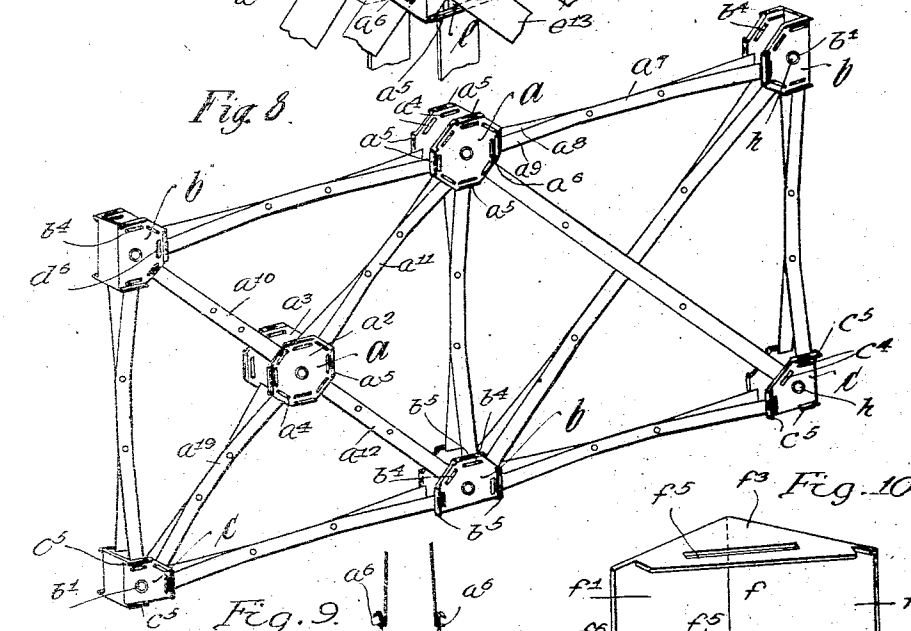
TOY BUILDING BLOCKS.

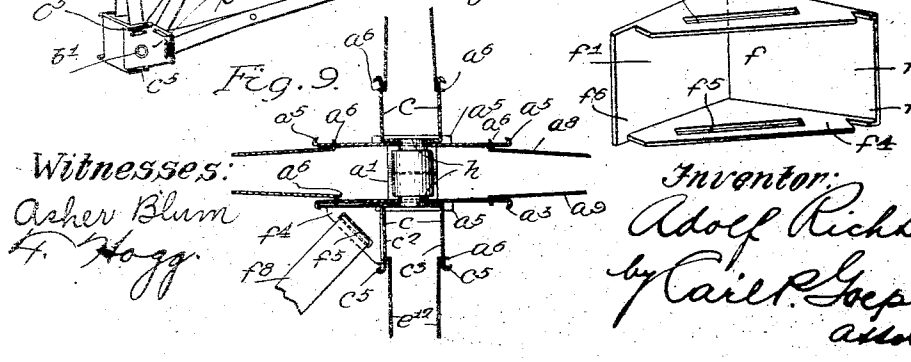
APPLICATION FILED NOV. 14, 1913.

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UNITED STATES PATENT OFFICE.

ADOLF RICHTER, OF RUDOLSTADT, GERMANY.

TOY BUILDING-BLOCKS.

1,124,526. Specification of Letters Patent. Patented Jan. 12, 1915.

Application filed November 14, 1913. Serial No. 801,005.

To all whom it may concern:

Be it known that I, ADOLF RICHTER, a citizen of the German Empire, residing in Rudolstadt, in Thuringia, Germany, have invented certain new and useful Improvements in Toy Building-Blocks, of which the following is a specification.

The object of this invention is to provide joint-members of a top building block set, adapted to firmly connect together the longitudinal or extending members thereof, the whole forming when interlocked a firm and secure structure extending either in a single plane or in numerous directions or planes, according to the idea of the builder. This object is accomplished by providing some of the joint-members with overturned flanges in which other joint-members are adapted to be fitted and thereby held at an angle to the first-named members, the second or auxiliary members being also provided with means for the attachment of the longitudinal or extending parts of the structure.

In the accompanying drawing, Figure 1 shows in plan and in side elevation one form of joint-member, Figs. 2 and 3 show in plan and side elevation respectively other forms of joint-members, Fig. 4 shows in plan, side elevation and front elevation one of the auxiliary joint-members, Figs. 5 and 6 show in plan, side elevation and front elevation two additional forms of auxiliary joint-members, Fig. 7 is a perspective view, on a larger scale, showing one arrangement according to which the main joint-members and auxiliary joint-members may be assembled, Fig. 8 is a perspective view, showing a number of joint-members and longitudinal members assembled into a structure extending in a single plane, Fig. 9 is a horizontal section on line 9—9, Fig. 7, and Fig. 10 is a perspective view, on a larger scale, of the auxiliary joint-members shown in Fig. 5.

Similar letters of reference indicate corresponding parts throughout all the figures.

The main joint-member a comprises a tubular hub a^1 at each side of which is secured a plate of octagon or other suitable shape. In each of said plates a^2, a^3 are arranged a plurality of marginal slots a^4, one adjacent each of the straight sides of the polygon. At the edge of each of the polygonal plates is provided a plurality of outwardly-overturned flanges a^5, said flanges being located on the alternate straight edges of the polygon. Such a joint-member or connecting-member furnishes, as may be seen, a means whereby the outwardly-bent ends a^6 of longitudinal members a^7 may be retained by the spring tension of said members a^7, each member a^7 being for this purpose composed of two spring-metal strips a^8, a^9 having normally spring tension tending to separate them at their ends to a point farther apart than the space between the plates a^2, a^3. For connecting the longitudinal members with the joint-member a it is only necessary to press with the thumb and finger the two members a^8, a^9 toward each other until they will pass between the plates a^2, a^3 and then engage their outwardly-bent ends a^6 in the openings a^4 and release the members. A plurality of such longitudinal members so connected to the joint-member a is shown at a^{10}, a^{11}, a^{12} and a^{13} in Fig. 8. In this way structures in a single plane may be built up to any extent desired.

At the edge of a structure, it is unnecessary to provide means for an extension of the same beyond the edge, and for this purpose the joint-member b is provided, having the hub b^1, plates b^2, b^3, slots b^4 and flanges b^5. The plates in this case have three sides of the octagon shape of Fig. 1 omitted therefrom, and in place thereof a single straight side having thereon one of the overturned flanges b^5. This member provides means for continuing the structure in several directions, but not in that direction beyond the edge of the structure. The longitudinal members are connected with the connecting-member b in the same manner as described with reference to the joint-member a, namely, by pressing together the divergent spring-actuated ends a^8, a^9 of the longitudinal members and then inserting them into the space between the plates b^2, b^3 and releasing them with their ends a^6 in the slots b^4. This connecting-block b is shown so employed at the two upper corners of the structure in Fig. 8, also in the lower portion of the structure at the middle part thereof.

For the corners of the structure where further extension thereof in two directions is not required, the joint-member c is employed, which comprises the hub c^1 having

the two plates c^2, c^3, each of which has only three sides of the octagon-shaped member a. The member c is provided with overturned flanges c^5 and with slots c^4. The longitudinal members are connected therewith in the same manner as described with reference to the other joint-members, by engagement of their ends in the slots c^4. Two of such members c are shown in Fig. 8, one at each of the lower corners thereof.

The auxiliary member e, shown in Fig. 4, comprises a U-shaped body-portion, each wing of the U having three sides e^1, e^2, e^3, the upper and lower of which are tapered toward the central side or edge e^2. At said central edge e^2 is located an overturned flange e^4. Adjacent each of the sides are slots e^5 to receive the ends of the longitudinal members. At top and bottom the member e is provided with transverse lugs e^6, e^7 respectively. The height of the U-shaped member, that is to say, the distance between the lugs e^6, e^7 is such that when the member e is applied to the face of either of the plates of the members a and b the U-shaped member e may be slid sidewise into position with said lugs e^6, e^7 beneath and retained by the flanges of the plate. Thus, in Fig. 7, the member e is shown with its upper lug e^7 engaged with the upper flange a^5 of the plate a^2, and its lower flange e^7 engaged with the lower flange a^5 of the plate a^2. The U-shaped member e is thereby retained frictionally with its wings e^9, e^{10} projecting outwardly perpendicular to the plane of the member a. Then by inserting in the slots e^5 of said member e the ends of longitudinal members a^7, it is obvious that these longitudinal members extend in a plane at right angles to that of the remainder of the structure. The ends of said longitudinal members are shown at e^{11}, e^{12}, and e^{13} in Fig. 7, the member e^{12} extending horizontally, while the member e^{11} is inclined upwardly, and the member e^{13} is inclined downwardly, but all in a plane at 90° to the plane of the connecting-member a. In like manner the member e may be connected with the member b at the edge of the structure, and thereby an extension of the structure in a plane at right angles to the part first constructed is obtained at its edge. The member c has no dimension between opposed overturned flanges corresponding with the distance between the lugs e^6, e^7, and it is therefore not possible to connect the member e with the member c, and it is necessary to provide a special auxiliary member for extending the structure at right angles from the joint-member c. Such an auxiliary joint-member is shown in Fig. 6. It is U-shaped and provided with two lugs g^1, g^2. The wings g^3, g^4 have two sides or edges g^5, g^6 respectively, one inclined and the other vertical. Slots g^7 are arranged adjacent said edges g^5, g^6. This member g may readily be inserted between the overturned flanges c^5 of the member c in the same manner as described with reference to the member e, that is to say, the lugs g^1, g^2 taking under the flanges c^5 and thereby securing the U-shaped auxiliary member frictionally in place. Longitudinal extending members are then secured thereto, by insertion of their bent ends into the slots g^7 in the manner previously described.

The joint-members described provide means for constructing a framing or other mechanical building construction in one plane and in a direction at right angles thereto. The auxiliary member f (Fig. 5) when used in connection with the other members described, provides means for extending the structure at an angle of 45° from any given plane thereof. For this purpose the member e is provided with overturned lugs e^{14}, e^{15} and a member f is provided having two angularly-disposed sides f^1, f^2 and triangular sides f^3, f^4 applied thereto. In each of the triangular sides is a slot f^5 and at the outer ends of the sides f^1, f^2 are lugs f^6, f^7 respectively. This member f is inserted in the position clearly shown in Fig. 7, namely, horizontally disposed with its lug f^6 engaging the overturned flange a^5 of the member a, and its lug f^7 engaging the overturned flange e^{15} of the member e, whereby the member f is frictionally held. A longitudinal member has its ends f^8 inserted in the slots f^5, as shown in Figs. 7 and 9, whereby said member extends at an angle of 45° to the plane through the member a and 45° to the plane through the member e. A diagonal bracing of the structure may be thereby obtained, which greatly strengthens the same. An additional variety of pleasing forms of construction is also permitted by the extension of the structure at an angle of 45°.

The hubs of the various connecting-members are provided with openings h through which shafts may be inserted, the openings of the auxiliary connecting-members for this purpose registering with the openings of the main connecting-member when the parts are assembled as described.

It is obvious that in place of the angles of 90° and 45° shown in the drawing, other angles may be adopted, and that various changes may be made in the construction without departing from the spirit of the invention as set forth in the claims.

I claim:

1. A connecting-member for a toy building set, comprising a hub, plates spaced apart at each side thereof and having outwardly-turned flanges at opposite sides of the plates, and a channel-shaped auxiliary connecting-member having lugs spaced apart and inserted in and frictionally re-

tained by said flanges, each of said members being provided with slots at their respective sides.

2. A connecting-member for a toy building set, comprising a hub, plates spaced apart at each side thereof and having outwardly-turned flanges at opposite sides of the plates, a channel-shaped auxiliary connecting-member having lugs spaced apart and inserted in and frictionally retained by said flanges, each of said members being provided with slots at their respective sides, outwardly-turned flanges on the auxiliary connecting-member, and a second auxiliary connecting-member having lugs engaged one with one of the lugs of the main connecting-member and the other with one of the lugs of the first auxiliary connecting-member, and provided with oppositely-arranged plates having slots therein.

3. A connecting-member for a toy building set, comprising a hub, plates spaced apart at each side thereof and having outwardly-turned flanges at opposite sides of the plates, a channel-shaped auxiliary connecting-member having lugs spaced apart and inserted in and frictionally retained by said flanges, each of said members being provided with slots at their respective sides, said connecting-member being provided in its hub with a transverse opening and said auxiliary member being provided with an opening registering therewith.

4. A connecting member for a toy building set, which has intermediate members, comprising a hub, plates spaced apart at each side thereof, and an auxiliary connecting member having a face, and projecting members at right angles thereto, means for engaging said face and said plates, and means on said plates and on said projecting members for engaging with the other and intermediate members of the toy building set.

In testimony whereof I affix my signature in the presence of two witnesses.

ADOLF RICHTER.

Witnesses:
WOLDEMAR HAUPT,
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