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PATENT SPECIFICATION



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COMPLETE SPECIFICATION

Improvements in or relating to Constructional Toys

I, JEROME FRANCIS KENNEDY, Joachimsthaler str. 38, Berlin, Ch.2, a British subject, do hereby declare the nature of this invention and in what
5 manner the same is to be performed, to be particularly described and ascertained in and by following statement:—

The present invention relates to a constructional toy of the kind consisting
10 primarily of metal parts such as tubes and connecting pieces in the form of sheet metal clip members having saddle-like intermediate portions and legs or prongs for engaging in the ends of tubes or the
15 like.

In constructional toys of this kind it has before been proposed to provide the clip member with the saddle-like portion of slightly smaller periphery than that of
20 the piece of tubing to be embraced and so that when inserting the legs or prongs into the end of a second piece of tubing the prongs are pressed together, with the result that the
25 saddle-like portion is caused to grip the first piece of tubing while the expansive action of the legs or prongs serves as additional security for the second piece of tubing. In this known construction,
30 however, the tubing is provided with an inwardly projecting groove or grooves into which parts of the clip members may be indented, or the clip members and tubing are otherwise shaped to prevent
35 relative turning movement therebetween.

According to the present invention, in a constructional toy comprising tubes, metal strips, plates and other building elements, a connecting piece is employed
40 for the connection of such elements with one another, such connecting piece comprising a central saddle-shaped section having two or more legs projecting from opposite sides thereof adapted for the
45 engagement in the end of a tube or with loops, or slots in or upon the plates or other building elements, the end of each leg being rounded or tapered towards the axis of the leg for the purpose of facilitating the engagement of the legs with
50 the tubes, loops or slots. The legs furthermore may be of tapering formation so that the gripping pressure of the

connecting pieces may be increased by pushing the legs further into engagement
55 with the tubes, loops, or slots.

The pressure between the connecting piece and the two elements to be connected can be further increased by constructing the legs of the connecting piece
60 in such a way that they do not lie directly in line with one another; in other words, the legs are so constructed that one leg is slightly off-set from the other, so that on insertion into the interior of the tube or loops additional pressure is brought to
65 bear both on the interior of the tube or loops and by reason of the twisting or scissor action so effected also upon the tube around which the saddle section is placed. The pressure resulting from the twisting or scissor action causes the corners or edges of the saddle section to have a tendency to dig into the surface of
70 the tube, thereby preventing not only the twist but also longitudinal slip upon the tube.

The legs may be provided with a notch or notches in such a way that on insertion of the legs into the loops or slots
80 on the plates or into the interior of the tube, if the latter tube is provided with ribs, the notch or notches may effect a snap grip therein.

It is also possible to provide the saddle-shaped section with a circular hole or holes so that a tube may be passed there-through enabling it to be connected with
85 another tube, the legs of the connecting piece being passed into the end of the second tube.

According to this invention, moreover, the plates appertaining thereto are so constructed as to provide a means of engagement with the said legs of the connecting
90 piece by providing the said plates with raised loops or slots which correspond in size or shape to the said legs of the connecting piece.

This can be attained in the case of
100 semi-cylindrical legs by making the inner radius of the loops correspond with the outer radius of the legs.

Where the said loops are provided on both sides of the plates, they form thus
105 in cross-section substantially a circular

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opening divided only in the middle by the normal plane of the plate. The legs of the connecting piece may thus be inserted on both sides of the plate in such a way

5 that the dividing plate itself contributes to the clamping of the legs while preventing rotation of the said semi-cylindrical legs within the circular opening provided by the loops.

10 The connecting piece can also be so constructed that the projecting legs are provided with notches capable of engagement with corresponding loops in the plate.

15 The saddle-shaped section of the connecting piece may be formed of a bent but open metal part on both the side edges of which the legs are situated, the saddle-shaped section being capable of being

20 rolled up or bent over.
The plates can be further provided with circular holes through which the tubes may be passed.

A technical advantage of a constructional toy which is provided with connecting pieces according to the present invention is its property of enabling interconnection of the various building elements with one and the same connecting piece, whereby for example, one

30 single type of connecting piece is capable of connecting a tube with a tube, a plate with a plate and also a tube with a plate, thus reducing the number of connecting

35 pieces required for building a large variety of models.
The accompanying drawings show by way of example parts constructed in accordance with this invention.

40 Figure 1 shows in cross-section and in plan and in elevation a T-shaped connecting piece with saddle-shaped middle section after having been bent in cylindrical form and showing the projecting

45 legs;
Figure 2 shows in side elevation a similar connecting piece with a short saddle-shaped section;

50 Figures 3 and 4 show in side elevation two further types of connecting pieces with angularly disposed legs;
Figure 5 shows in cross-section and in side elevation a connecting piece in double T-shape;

55 Figure 6 shows in side elevation a connecting piece for the parallel connection of two tubes or one tube and a plate;

Figure 7 shows in side elevation a connecting piece for angular connection with a short saddle;

60 Figure 8 shows in plan, in sectional elevation and in cross-section a means of connecting tubes with plates;

Figure 9 shows the connection of two plates with one another; and

Figure 10 shows in perspective a modified construction.

The connecting piece is constructed in all the forms described from a saddle-shaped section 1 and projections or legs 2, 3. The legs are of channel-like formation with rounded ends which facilitate the engagement of the legs with a tube or with a loop, rib or slot. Preferably also the legs are of slightly tapering formation as shown so that as the legs are, for example, pushed further into the end of the tube the gripping pressure is increased. As will be seen from the drawings the two legs are set at a slight angle to one another in such a way that on connecting them to a plate or tube in the manner described a lever action is effected and when a tube 6 is situated within the saddle section after being bent into cylindrical form, this lever action (which is caused by bringing the legs in line with one another on inserting them into the loops or tube) causes the points 4 and 5 of the saddle section 1 to press against the tube 6.

The saddle section 1 and the legs 2 and 3 are so constructed that a plate 7 can be inserted between the said legs and a clamping action takes place between the loops 8 on the plate 7 and the legs 2 and 3 on their insertion into the said loops.

In Figures 3, 4 and 7 examples are shown of the legs set at an acute and obtuse angle to the saddle section.

In Figure 5 is shown a connecting piece which enables two parts to be connected together lengthwise or three tubes crosswise, in which the connecting piece is constructed out of two parts 12 and 13 of which, when the saddle sections 14, 15 thereof are placed together to form a cylinder, the four legs of the two connecting pieces form two substantially cylindrical or semi-conical legs projecting from opposite sides of the central cylinder so that the two pairs of legs can be connected to two separate elements while the tube can pass through the cylinder thus formed.

Figure 6 shows a construction for connecting two tubes together parallel to one another, or a tube and plate, there being a section 16 connecting the two operating parts together.

Figure 8 shows a connection of a plate and tube with connecting pieces through the medium of loops 8. Figure 9 shows a connecting piece 17 with two parallel pairs of legs 18 and 19 connecting two plates together.

As shown in Figure 10 the connecting piece may be adapted for use with a tube of hexagonal section, the saddle portion

tion 29 of the connecting piece being correspondingly shaped.

The legs 2 may be provided with notches 31 in which the loops 8 engage; it is an advantage to provide two or three notches at different positions along the length of the legs. It is thus possible, by engaging a loop with different notches, to increase or decrease the pressure or grip of the one part with the other. If the notch is on the edge of the leg the scissor action of the legs will cause it to engage in the loops.

The tube 6 may also be provided with ribs to engage in the notches 31 of the legs when the latter are inserted in the tube.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A constructional toy of the kind referred to comprising tubes, metal strips, plates and other building elements, and wherein the connecting piece employed for the connection of the said elements with one another comprises a central saddle-shaped section having two or more legs projecting from opposite sides thereof adapted for engagement in the end of a tube and with loops or slots in or upon the said building elements, the end of each leg being rounded or tapered towards the axis of the leg for the purpose of facilitating the engagement of the legs with the tubes, loops or slots.

2. A connecting piece as claimed in Claim 1, wherein the legs are of tapering formation, for the purpose described.

3. A connecting piece as claimed in Claim 1 or in Claim 2, wherein the legs are offset so that when the saddle section is bent over a tube the legs take up a slightly scissor-like position in which they are out of line with respect to one another.

4. A connecting piece as claimed in any of the preceding claims, so constructed that the saddle section forms substan-

tially half a cylinder so that when two such connecting pieces are placed together the two said semi-cylinders form a central cylinder and the four legs of the two connecting pieces form two substantially cylindrical or semi-conical legs projecting from opposite sides of the central cylinder.

5. A connecting piece as claimed in any of the preceding claims, wherein the legs are provided with notches adapted to engage with loops or slots in a plate or with corresponding ribs in a tube when inserted therein.

6. A connecting piece as claimed in any of the preceding claims, so constructed that the legs form a right angle, an obtuse or acute angle to the middle or saddle-shaped section.

7. Plates in a constructional toy as claimed in any of the preceding claims having raised projections which form substantially semi-circular loops above the normal plane of the plate.

8. Plates in a constructional toy as claimed in Claim 7, wherein the substantially semi-circular loops are so arranged on either side of the plate as to form in cross-section substantially a circle divided diametrically by the normal plane of the plate.

9. A connecting piece as claimed in any of the preceding claims, wherein the saddle section is provided with a circular opening.

10. A connecting piece as claimed in any of the preceding claims, wherein the saddle-shaped section is formed of a bent but open metal part on both the side edges of which the legs are situated, the saddle section being capable of being rolled up or bent over.

11. Plates as claimed in Claim 7 or in Claim 8, provided with circular openings.

12. A constructional toy having parts substantially as and for the purpose hereinbefore set forth.

Dated the 29th day of May, 1934.

J. F. KENNEDY.

[This Drawing is a reproduction of the Original on a reduced scale.]

