

April 24, 1928.

1,667,256

W. HERRSCHAFT

TOY CONSTRUCTION SET

Filed June 8, 1927

2 Sheets-Sheet 1

Fig. 6.

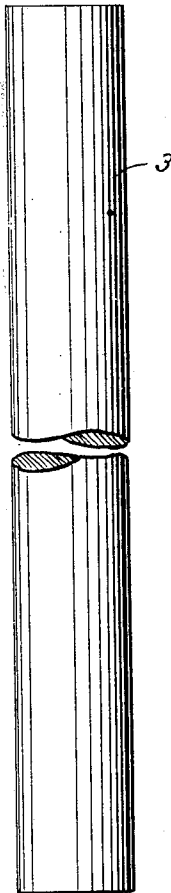


Fig. 1.

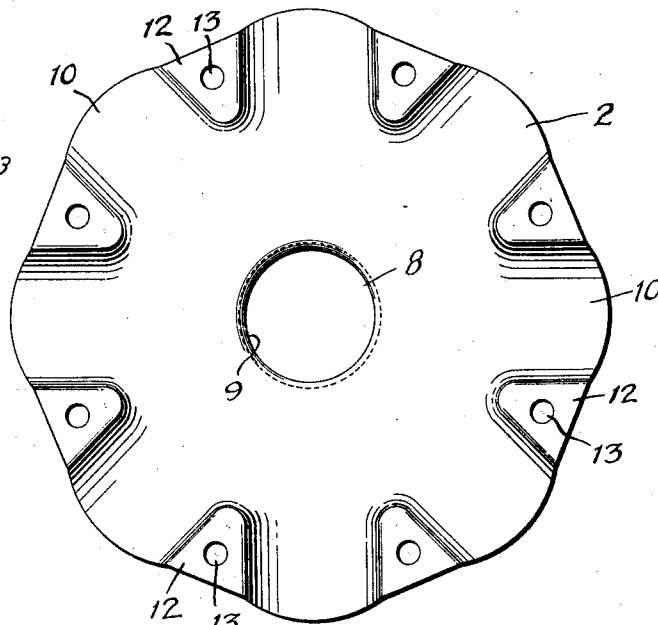


Fig. 2.

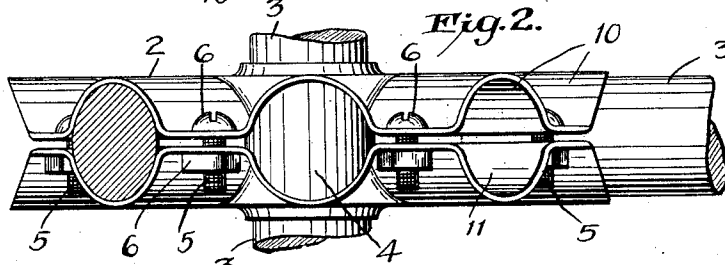


Fig. 3.

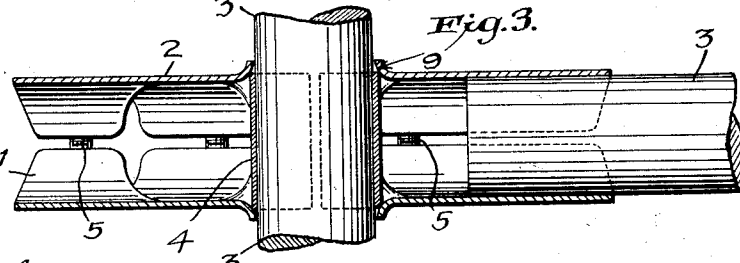


Fig. 5.

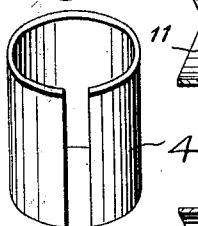
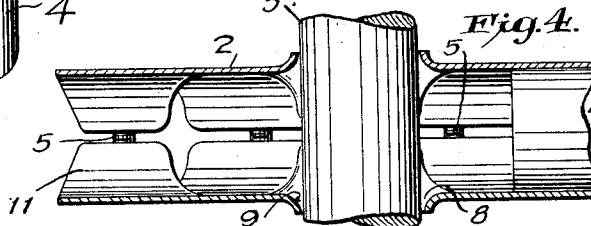


Fig. 4.



INVENTOR
William Herrschaft
BY *J. H. Handberg*
ATTORNEY

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Fig. 7.

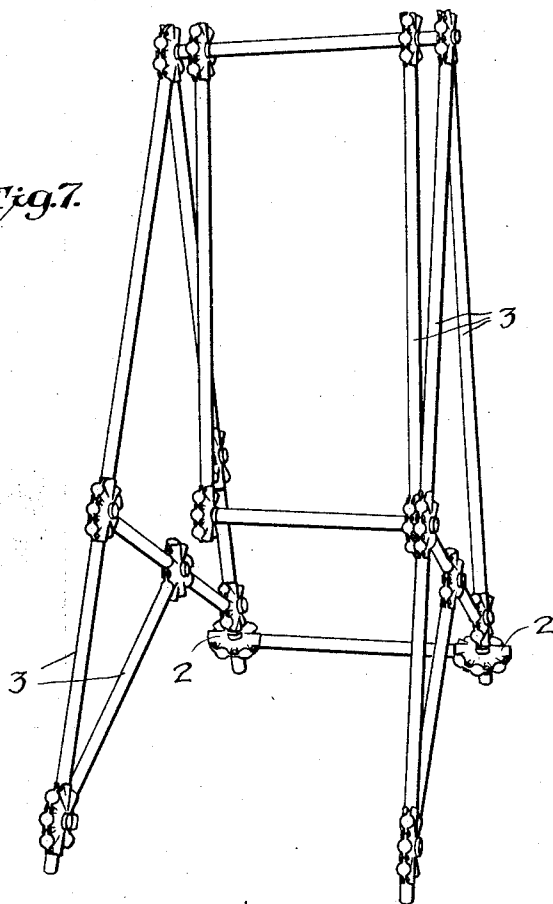


Fig. 8.

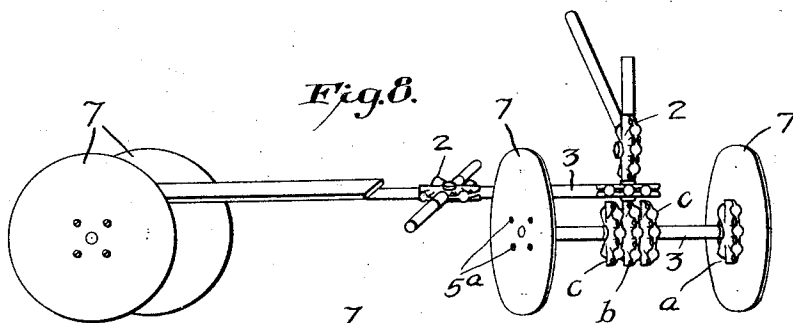
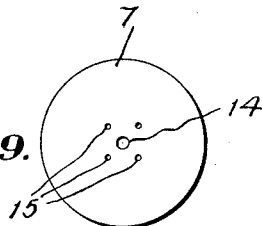


Fig. 9.



INVENTOR
William Herrschaft
BY
J. B. Handbury
ATTORNEY

UNITED STATES PATENT OFFICE.

WILLIAM HERRSCHAFT, OF NEW YORK, N. Y.

TOY CONSTRUCTION SET.

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This invention relates to a construction set for use by children for purposes of entertainment and to develop their practical faculties. The object is to provide a means of this character which is simple and cheaply manufacturable, and which is employable with sufficient facility, yet which calls upon the mechanical abilities of the child, whether small or great, enabling him to make a wide variety of structures and devices, the range depending only on his facility and imagination. The invention is applicable for making comparatively large size or usable constructions, within or bordering the field of actuality, other plans of this character having been limited to the making of miniature objects or suggestive models. Not alone dependent on size, the object of the invention is to permit of a wider scope and freer application in the design and construction of things close to reality.

In the accompanying drawings, forming part hereof:

Fig. 1 is an inside face view of one of the connection plates;

Fig. 2 is an edge view of two of the connection plates joined to form a connection member, a rod being shown passing through the axial opening and two rods being shown in radial sockets, the rods broken away and sectioned;

Fig. 3 is a section through Fig. 2, taken in the plane of the axis, the rods in the plane of the section being shown in elevation;

Fig. 4 is a fragmentary view similar to Fig. 3, omitting the clamping sleeve;

Fig. 5 is a perspective view of one of the clamping sleeves;

Fig. 6 is an elevation of one of the rods, with its intermediate portion broken away;

Figs. 7 and 8 are perspective views of two illustrative structures made with the invention; and

Fig. 9 is a face view of a disc.

A complete construction set according to the invention comprises a number of sheet metal plates 2, a number of cylindrical wooden rods 3, of suitably differing lengths of the same diameter, clamping sleeves 4, one for each pair of mating plates, and an appropriate number of stove screws or bolts 5 and nuts 6. Also included in the set are a number of large wooden discs 7, to form wheels, etc.

The plates 2 may be of general disc shape,

multilateral or polygonal. They are formed with central or axial openings 8 of substantial diameter, these openings being flanged outward on a curve or inclination, so as to form sloping surfaces 9 on the inside.

The plates are also radially corrugated (10), so that when mating plates are put together with the corrugations outside, split sockets 11 are formed. The curvature of the corrugations is such that the area of these radial sockets is approximately the same as the area of the openings 8, or so that the same rods may be received or inserted either in the openings or in the sockets, both the axial openings and the radial sockets being adapted to receive rods 3 of one diameter.

The flat or depressed portions 12, of the plates between the radial corrugations, are pierced with small holes 13. The screws 5 are passed through these holes and the nuts 6 are applied to them, to draw the plates together, or toward each other, in clamping or gripping relation to the rods and the sleeves 4.

Each sleeve 4 is a short length of cylindrical tube split lengthwise at one side,—or it may be made of a strip curved into the same form,—the sleeve having a resilient set which causes it normally to have a comparatively open condition.

This sleeve is of a length and diameter such that it is adapted to be interposed between the central portions of two mating plates, forming an interior passage between the openings 8, the ends of the sleeve bearing against the inclined, inner, camming or wedging surfaces 9.

With the parts of the connection device preliminarily assembled in this manner, the screws and nuts being loose, the ends of one or more rods can be inserted in one or more of the radial sockets, and a rod can be passed through the axial openings and the internal clamping sleeve. Tightening of the screws or nuts will then draw the clamping plates together, and this will both clamp the sockets 11 on the radial rod or rods and squeeze the sleeve 4 against the axial rod, the wedge or cam 8 gripping the sleeve on the axial rod and also gripping the sleeve to the plates, so that the axial rod and the connection device are rendered substantially fixed or immovable in respect to each other and to the radial rods.

The sleeve 4 can also be left out of the assemblage, as shown in Fig. 4. In that event the tightening of the fastenings will clamp the plates on the radial rod or rods, but will leave the axial rod free, so that this rod can turn in the connection device or the device can turn on the rod.

In certain parts of a structure, a radial rod, or two or more radial rods, may be inserted in one of the connection devices, without any axial rod. Again, an axial rod may be passed through one of the devices, without radial rods, the axial rod being either clamped or free as desired. Or both radial and axial rods may be assembled with the same device, the axial rod being either clamped or free.

The sleeve 4 can be inserted and removed by loosening the screw and nut fastenings sufficiently to permit the sleeve to be passed in or out through one of the radial sockets. It is an advantage, however, that the fastenings be of such character that the plates and the fastenings can be entirely taken apart, the set as furnished consisting of separate parts, so that the child must work with the individual elements. With somewhat less advantage, however, the connection members can be packaged partly assembled, or with fastenings of such character that they can be loosened but not entirely disconnected.

The fastenings, and the flexibility in the plates, enables them to grip the inner ends of radial rods fixedly. When an axial rod and the clamping sleeve are present the same provisions enable the plates to grip the sleeve and the sleeve to grip the axial rod with equal firmness.

Fig. 8 illustrates the use of the discs 7 as wheels. These discs are provided each with a central opening 14 of the same size as the openings 8 in the connection plates, in order to fit the rods 3, and with a suitable number of small holes 15 spaced at a distance about the central opening. These holes correspond in position to certain of the holes 13 in the connection plates.

In Fig. 8 the discs 7 have been placed on the ends of the rods which serve as axles, beside connection members *a* made up of plates 2, certain of the screws, marked 5^a, being long enough to pass through the plates and also through the holes 15 in the discs, to secure the discs to the connection members. In this example, it may be understood that the connection members marked *a* contain the clamping sleeves and are therefore fixed to the axle rods, whereas these rods turn in the connection members *b*, which do not contain the sleeves, connection members *c* being clamped to the rods at opposite sides of the members *b* to act as retainers preventing displacement of the axles lengthwise.

The drawings illustrate only two of the

very numerous structures and articles that can be made with the system.

I claim:

1. A toy construction set comprising a number of mating plates having axial openings and corrugated to form split radial sockets, and a number of rods adapted to be inserted in such sockets and to pass through such axial openings, clamping sleeves adapted to be interposed between said plates to grip axial rods by compression, and means for drawing said plates together.

2. A toy construction set comprising a number of mating plates having axial openings and corrugated to form split radial sockets, and a number of rods adapted to be inserted in such sockets and to pass through such axial openings, clamping sleeves adapted to be interposed between said plates to grip axial rods by compression, said plates having inclined surfaces at the inner sides of said axial openings to cooperate with the ends of said clamping sleeves, and means for drawing said plates together.

3. A toy construction set comprising a number of mating plates having axial openings and corrugated to form split radial sockets, and a number of rods adapted to be inserted in such sockets and to pass through such axial openings, clamping sleeves adapted to be interposed between said plates to grip axial rods by compression, said plates having inclined surfaces at the inner sides of said axial openings to cooperate with the ends of said clamping sleeves and being further provided with holes between the axial corrugations, and means adapted to pass through said holes to draw the plates together and permitting the plates to be taken apart.

4. The herein described connection member comprising the combination of two mating, flexible plates having axial openings and corrugations forming radial sockets adapted to receive cylindrical rods, means for drawing said plates together, and a clamping sleeve interposed between said plates to grip an axial rod by the compression of the plates.

5. A toy construction set comprising a number of mating plates having axial openings and corrugated to form split radial sockets, and a number of rods adapted to be inserted in such sockets and to pass through such axial openings, means for drawing said plates together, and a number of discs adapted to be secured to the plates and to serve as wheels.

6. A toy construction set comprising a number of mating plates having axial openings and corrugated to form split radial sockets, and a number of rods adapted to be inserted in such sockets and to pass through such axial openings, means for drawing said plates together, and a number of discs adapt-

ed to serve as wheels, said discs containing central openings adapted to fit axial rods and also having additional openings for securement to the plates.

5 7. A toy construction set comprising a number of mating plates having axial openings and corrugated to form split radial sockets, and a number of rods adapted to be

inserted in such sockets and to pass through such axial openings, clamping sleeves adapted to be interposed between said plates to grip axial rods by compression, means for drawing said plates together, and a number of discs adapted to be secured to the plates and to serve as wheels. 10

WILLIAM HERRSCHAFT.