F. P. FRANKLIN.

CONSTRUCTIONAL TOY AND EDUCATIONAL DEVICE.

APPLICATION FILED APR. 15, 1919.

1,347,808.

Patented July 27, 1920.

3 SHEETS—SHEET 1.

Fig. 9.

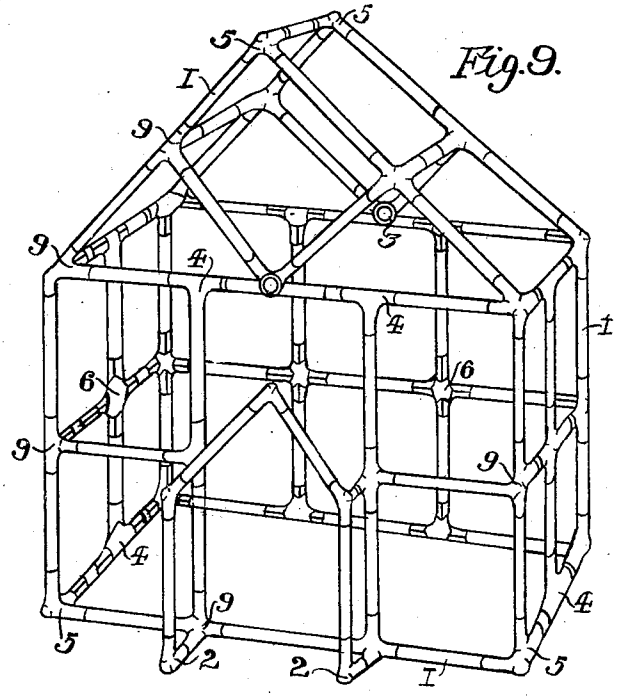
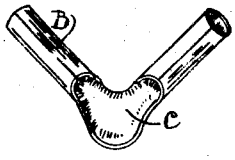



Fig. 1.




Fig. 2.



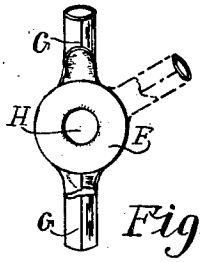




Fig. 3.

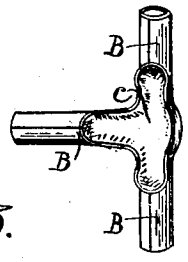



Fig. 4.

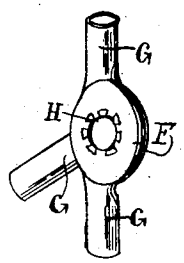
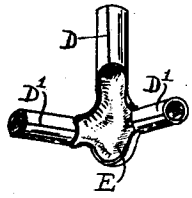



Fig. 5.

Fig. 6.



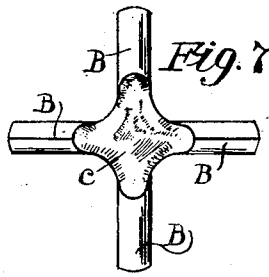




Fig. 7.

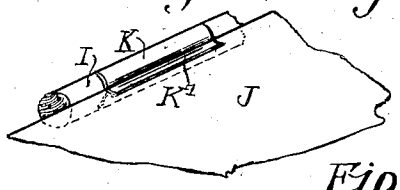



Fig. 8.

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3 SHEETS—SHEET 2.

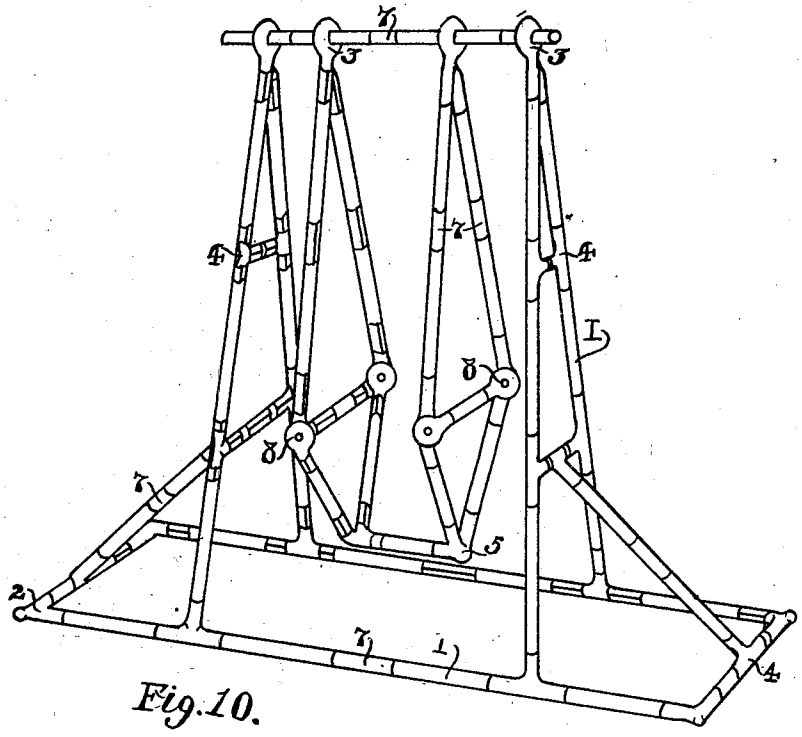


Fig. 10.

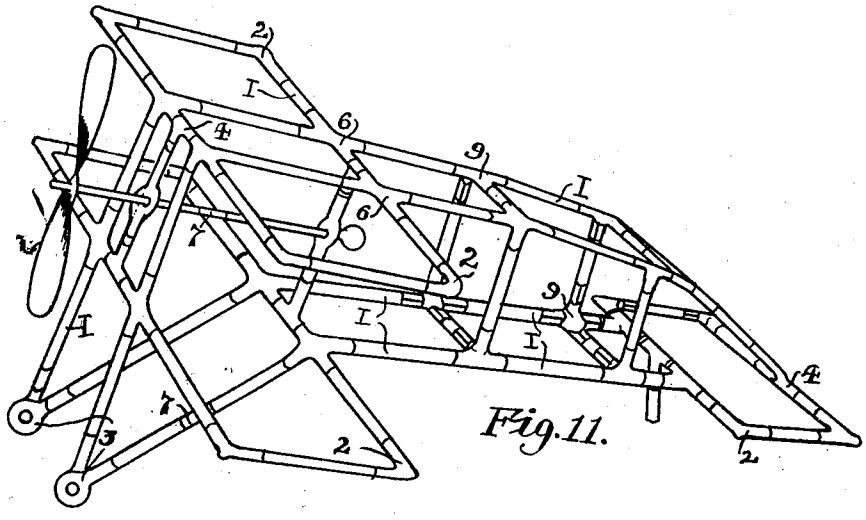


Fig. 11.

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3 SHEETS—SHEET 3.

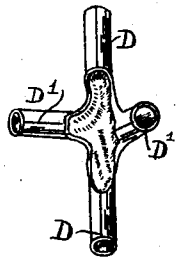



Fig. 12.

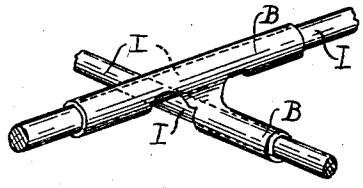



Fig. 13.

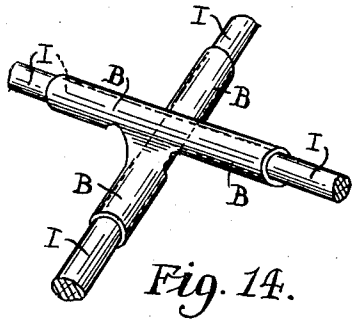



Fig. 14.

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# UNITED STATES PATENT OFFICE.

FRANCIS PATRICK FRANKLIN, OF LIVERPOOL, ENGLAND.

## CONSTRUCTIONAL TOY AND EDUCATIONAL DEVICE.

1,347,808. Specification of Letters Patent. Patented July 27, 1920.

Application filed April 15, 1919. Serial No. 290,206.

*To all whom it may concern:*

Be it known that I, FRANCIS PATRICK FRANKLIN, subject of the King of Great Britain, residing at Liverpool, in the county of Lancaster and Kingdom of England, have invented certain new and useful Improvements in Constructional Toys and Educational Devices, of which the following is a specification.

This invention has reference to toys or educational devices of the type whose elements or component parts comprise a number of rods or bars, and circular sectioned tubes or socket like connecting pieces split or gapped longitudinally so as to impart resiliency to the sides, such elements being adapted to be interchangeably connected one with another to form various mechanical and toy structures and models.

In a toy or educational device of the type referred to, my invention is characterized in that the connecting pieces which consist of split sockets projecting from a central part, are arranged to lie in two parallel planes, but with the axis of one or more of the sockets that lie in one of the planes at an angle with respect to the socket or sockets in the other plane so as to enable the rods that are passed into the respective sockets to cross one another. A further feature of my invention is, that the connecting pieces are formed of flattened parts (having center holes) from each of which flattened parts projects a split socket member integral therewith, the said flattened parts when laid face to face, having a short metallic tube passed through the center hole and flanged over against the faces of the center parts in such manner that the short metallic tube forms a pivot and enables the socket portions to be set at any angle required with respect to each other. Another feature is that the connecting pieces are formed of split tubular sleeves whose adjacent edges where they touch are flanged so as to project laterally to form a clip to hold sheets of paper or the like. The interchangeable rods which I prefer to use consist of match splints, though bicycle wire spokes (or the scrap ends of same) and the like may be used, the result being that a toy of the cheapest possible character can be produced, as the connecting pieces can be manufactured at a very cheap price and matches and bicycle wire spokes being a cheap commodity are to be found in every household. Furthermore the matches after being utilized for building a toy need not be wasted but can be used for their original purpose of producing ignition by friction, or the waste splints of already used matches may be employed.

In the accompanying drawings:—

Figures 1 to 7 inclusive are views of the socket like connecting pieces by which the splints or wires are connected to form various mechanical and other structures.

Fig. 8 is a view of another connecting piece showing its mode of application.

Figs. 9, 10 and 11 are examples of complete structures built up of match splints or wires and socket like connecting pieces.

Figs. 12, 13 and 14 are similar views to Figs. 1 to 7, inclusive.

Referring to these figures A (Fig. 1) are the sleeves or socket like connecting pieces herein before referred to, which are made from blanks pressed from thin sheet metal by dies, and split or gapped longitudinally. They are of such a diameter that the splints can be forced thereinto at each end so as to be in line, the sleeves being adapted to fit on to the splints with a certain amount of friction. B is a socket or sockets projecting from a central part C (Figs. 2, 4 and 7) so as to form one, two or more sockets projecting at right angles to another socket or sockets, thus forming angle pieces (Fig. 2). Fig. 4 shows tee pieces and Fig. 7 cross pieces, D is a socket or sockets projecting from a central part E so that its axis will lie at an angle with other sockets D′ to which it is joined by the part E (Figs. 6 and 12). The connecting pieces may in fact be made in innumerable forms with their socket or sleeve like connecting pieces disposed so as to project at a great variety of angles from each other or from a central portion and each connecting piece may have two, three, four, five, six or more sockets as shown in Figs. 6 and 12. By making them of thin sheet metal they can be bent readily, and the axes of the sockets may lie in the same plane or in different planes or in parallel planes. For instance one kind of connecting piece is made from a sheet metal blank of such shape as to produce when subjected to the action of dies in a press a number of sockets projecting from a central part. These sockets are arranged to lie in two parallel planes, but the axis of one of these sockets B (Fig. 13) or the axis of two of these sockets B (Fig. 14) that lie in one

of the planes is at an angle with respect to the axis of the sockets in the other plane, so as to enable the splints I that are passed into one or more of the sockets to cross the splints that are passed into the other sockets. Another form of connecting piece comprises flattened parts or disks F from each of which projects a socket G which is made integral therewith. These disks have central holes punched in them. Two of these disks as shown in Fig. 3, or three as shown in Fig. 5 or in fact any suitable number, are laid face to face and a short metallic tube or eyelet H is passed into the central holes, and the ends are flanged over against the faces of the disks F in such manner that the eyelets H form pivots about which the socket portions can be turned so that they can be set at any angle required with respect to each other thus forming hinged joint pieces, the uses of which are shown at 3 and 8 in Figs. 10 and 11. These pieces differ from those heretofore proposed wherein each flattened part had a plurality of sockets projecting radially therefrom, and the flattened parts of two of these connecting pieces were laid face to face so that the sockets of one piece interlocked in the spaces between the sockets of the other piece, the two pieces being fastened together by a pin so that a rigid structure resembling the hub and spokes of a wheel (as distinguished from a hinged joint piece) was produced. All the sockets are stamped so as to form tubular members with the adjacent edges of each tube touching or not quite touching so as to expand a little when a splint I is forced in. All the sockets are made of standard size so that the parts are interchangeable, and a great variety of structures can be built up therefrom by utilizing common match splints thus allowing for the display of much ingenuity and originality. Fig. 9 shows a doll's house and Fig. 10 a swing boat and Fig. 11 an aeroplane built up of a number of match splints and connecting pieces such as those described, 2 being the angle pieces (Fig. 2), 3 the hinge pieces (Fig. 3), 4 the three way pieces (Fig. 4), 5 the three way angles (Fig. 6), 6 the four way pieces (Fig. 7), 7 the ferrules (Fig. 1), 8 the triple hinges (Fig. 5) and 9 are four way angles. To facilitate roof plates or wall plates J of paper or cardboard being applied to a structure built up of these parts, connecting pieces K are also provided consisting of split tubular sleeves whose adjacent edges where they touch are flanged at K′ so as to project laterally and form a clip as shown in Fig. 8. The splints having been forced into these sleeves K, the flanges K′ projecting therefrom form clips or jaws between which the edges of plates or strips may be clipped so as to hold the latter firmly in position. While I have referred in this description to the rods that are passed into the sockets being composed of match splints, yet I would have it understood that such rods may consist of wire bicycle spokes (or the scrap ends of same) and the like.

I declare that what I claim is:—

1. A toy or educational device comprising two split sockets projecting from an integral central part and arranged to lie in two parallel planes but with the axis of the socket that lies in the one plane at an angle with respect to the socket in the other plane so as to enable the rods that are passed into the respective sockets to cross one another.

2. A toy or educational device comprising socket-like connecting pieces, formed of flattened parts (having center holes) from each of which flattened parts projects a split socket member integral therewith, the said flattened parts being laid face to face: and a short metallic tube passed through the center holes and flanged over against the faces of the center parts in such manner that the short metallic tube forms a pivot and enables the socket portions to be set at any angle required with respect to each other.

In witness whereof I have hereunto signed my name this 29th day of March, 1919, in the presence of two subscribing witnesses.

FRANCIS PATRICK FRANKLIN.

Witnesses.

G. C. DYMOND,

JOHN MCLACHLAN.