

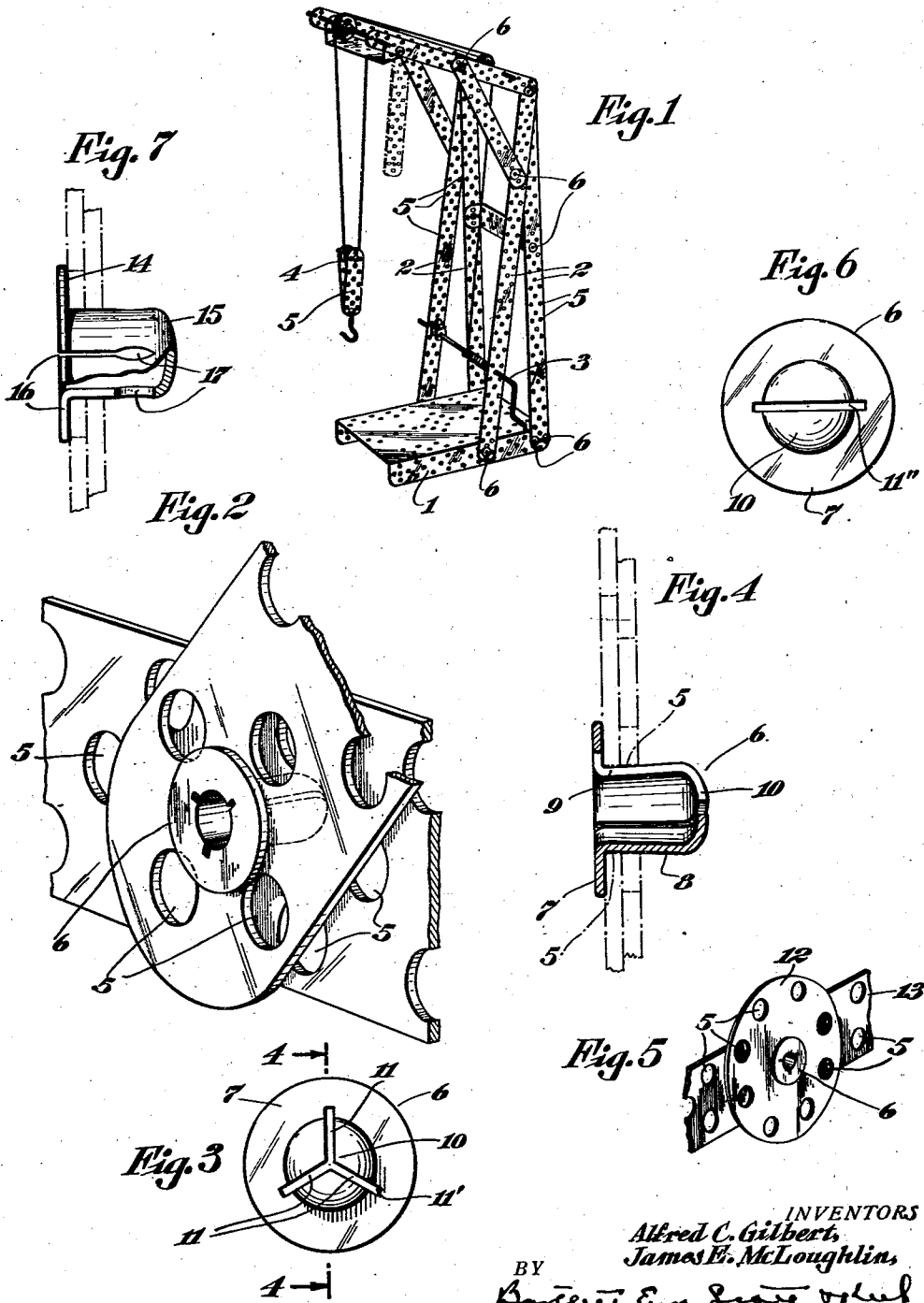
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CONSTRUCTIONAL TOY

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CONSTRUCTIONAL TOY

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This invention relates to constructional toy outfits, such as the well-known "Meccano", and is characterized by its simplicity and by the facility with which the various elements of the outfits may be assembled and fastened together, even by small children, to build any desired toy, and then dis-assembled with equal facility.

One object of the invention is a constructional toy comprising novel fastening and retaining members which may be readily inserted through registering holes of two or more toy elements, for permanently holding the same in assembled relation, in lieu of the usual nuts and bolts, and which may with equal facility be disengaged by the application of longitudinal pressure at the smaller end of the fastening members.

A further object of the invention is the provision of fastening or retaining members or elements of this general character which, in addition to their usual function, are adapted to serve as bearings or shafts for pulleys, wheels, and the like.

For a better understanding of the invention reference may be had to the accompanying drawing wherein:

Fig. 1 is a perspective view of a constructional toy embodying the invention;

Fig. 2 is a perspective view of a detail thereof;

Fig. 3 is a plan view of one of the fastening elements thereof;

Fig. 4 is a section along the line 4—4 of Fig. 3;

Fig. 5 is a perspective view of a detail of the toy;

Fig. 6 is a view of a modification; and

Fig. 7 is a view of another modification.

Referring to the drawing, the invention is illustrated as embodied in a toy hoist containing a base 1, standards 2, a windlass shaft 3 and the block and tackle 4. The base plate 1, the standards 2, and other similar elements of the toy are provided with a multiplicity of perforations 5 all preferably of the same size and equally spaced according to a predetermined standardization. The perforated parts or elements of the toy are secured together by the resilient connecting members 6, which members may be readily and easily inserted through registering perforations 5 of the parts to be fastened together, and which may be with equal facility and readiness removed by applying longitudinal pressure with the fingers. These members, as described below, also form bearings or shafts for pulleys and the like, such for example as the pulley or wheel 12, this function being in addition to the retaining and holding function.

The resilient connecting members 6, in the particular embodiment shown, comprise a flange-like base 7 and an expansible resilient projection 8. The projection 8 is circular in cross section to correspond to the circular perforations 5. The inner portion of the projection is of a size or cross section to fit closely in the registering circular perforations 5 of the separate elements of the toy to be fastened together, while the outer end 10 of the projection is normally somewhat larger than the perforations 5, but contractible and resilient radially thereof to enable the same to be inserted forcibly through the registering perforations by slight pressure applied to the flange or base 7. The expansibility and contractibility is effected by making the member 6 of a resilient material, such as spring metal, with elongated longitudinal slots 11 formed in the projection 10 and preferably extending at 11' into the base 7. In the particular embodiment shown in Figs. 2-5 there are three such slots formed in the member, which slots are equally spaced to divide the projection into three sector parts. These slots permit the sides of the projection to be slightly compressed by engagement with the walls of the perforations 5 while passing therethrough, thus enabling the member 6 to be readily inserted and removed at will. At the same time they form a secure fastening and retaining means for two or more of the perforated elements of the toy when inserted through registering perforations with the flange part 7 engaging or in proximity to the surface of one of the perforated elements. The projections 8 are preferably frusto-conical in shape and the perforated members tend to move down to the smaller dimension against the flange 7.

In Fig. 5 a disc wheel 12 is shown attached to a perforated strip 13 by means of one of these resilient retaining elements 6, and it is observed that the projecting part 8, Fig. 4, of this element forms a bearing or shaft, upon which the disc 12 rotates, in addition to its function as a fastening and retaining means.

In Fig. 6 is shown a modification wherein the members 6 have a slot 11' formed straight across the projection, which enables the squeezing of the same through the perforations 5 for fastening the parts together. It is also understood that the shape of the projections 8 may vary from that shown without departing from the invention. For example, instead of frusto-conical they may be more bulbous in shape.

In Fig. 7 is shown a modified form of fastening means, wherein the member 6 comprises a

conical body part 15 having a closed end and a flange part 14 at the open end, with slots 16 formed longitudinally of the body part and through the flange 14. The inner ends 17 of the slots are enlarged as indicated and in the particular embodiment shown there are four such slots circumferentially and equally spaced from each other by 90°, although it is understood that the number of such slots may be varied. The member 6 is thus formed from a sheet metal having the required spring and resiliency and the whole including the flange is divided circumferentially by the slots into a multiplicity of independently springing, gripping and retaining parts for firmly holding the elements of the toy together. The closed end must of course be slightly smaller than the perforations 5 while the main body is larger, requiring the independent spring leaves to be pressed inwardly against their tension by the walls of the perforations when the members are pressed through.

The resilient fastening element 6 may be made from any desired material such as spring metal of a character which is easily worked or stamped. Further, these new fastening elements can be put in position much more rapidly than the bolts and nuts, and can be successfully manipulated by very small children.

We claim:

1. A constructional toy assembly comprising at least two component perforated parts and fastening members for the same, each member being of a single integrally formed piece having a flanged part on one side of the perforated members and an elongated projecting part passing through the perforations of a cross-section and peripheral contour to form an engaging surface without abrupt change lengthwise thereof for engaging the walls of the perforations, said projections having at least two slots formed therein to render the same expansively resilient and being of normally larger cross-section at their larger ends than the perforations, but resiliently contractible for insertion through registering perforations and resiliently gripping and engaging the walls of each of the perforations and retained therein solely by friction, said projections being thereby capable of ready insertion and removal by a simple straight pushing movement with the fingers.

2. A constructional toy assembly comprising at least two component perforated parts and fastening members for the same, each member being of a single integrally formed piece having a flanged part on one side of the perforated members and an elongated projecting part of substantially circular cross-section and generally of conical contour to form an engaging peripheral surface without abrupt change lengthwise thereof for engaging the walls of the perforations, said projections having at least two slots formed therein to render the same expansively resilient and being of normally larger cross-section at their larger ends than the perforations, but resiliently contractible for insertion through

registering perforations and resiliently gripping and engaging the walls of each of the perforations and retained therein solely by friction and the outer ends of the projections being formed of smooth convex surfaces, said projections being thereby capable of ready insertion and removal by a simple straight pushing movement with the fingers.

3. A resilient connecting member for constructional toys and the like having separate elements to be fastened together consisting of a flanged base having a substantially conical projection uninterrupted throughout and divided by at least one longitudinal cut, the inner portion of said projection being of a cross-section to fit closely in registering perforations of each of said separate elements, and the body of said projection being normally expanded to a cross-section gradually increasing in an outward direction to provide resilient compressible complementary clamping parts for ready insertion into and engagement by friction alone with the wall of each of the registering openings of said elements and retaining the same at any point intermediate the ends of the projection.

4. A resilient connecting member of the character set forth in claim 3, wherein the ends of the projections are closed except for the cut or cuts formed therein.

5. In a constructional toy, a resilient connecting member consisting of a flanged base and a projection of conical shape without abrupt change therein extending from the flange, said projection being closed at the end remote from the flange and open at the flange and having a plurality of longitudinal slots formed radially through the flange and along the projection to points adjacent the closed end, the inner portion of the projection adjacent the flange being normally of a cross section greater than the perforations of the separate elements of a constructional toy, and the outer end of said projection being of a cross section slightly less than the perforations.

6. In a constructional toy, a resilient connecting member consisting of a flanged base and a projection integrally formed with and extending from the flange and having a peripheral engaging surface without abrupt change lengthwise thereof, said projection having at least two longitudinal slots extending from points adjacent the outer end throughout the remainder of the body of the projection and entirely through the flange, the inner portion of the projection adjacent the flange being normally in cross-section greater than the perforations of the separate elements of a constructional toy and the outer end of said projection being of a cross-section slightly less than the diameter of the perforations.

7. In a construction of the character set forth in claim 6 wherein the slots are enlarged at certain points of the projection.

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