April 8, 1941. F. BISCHOF 2,237,329

TOY ASSEMBLY

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Fig. 1

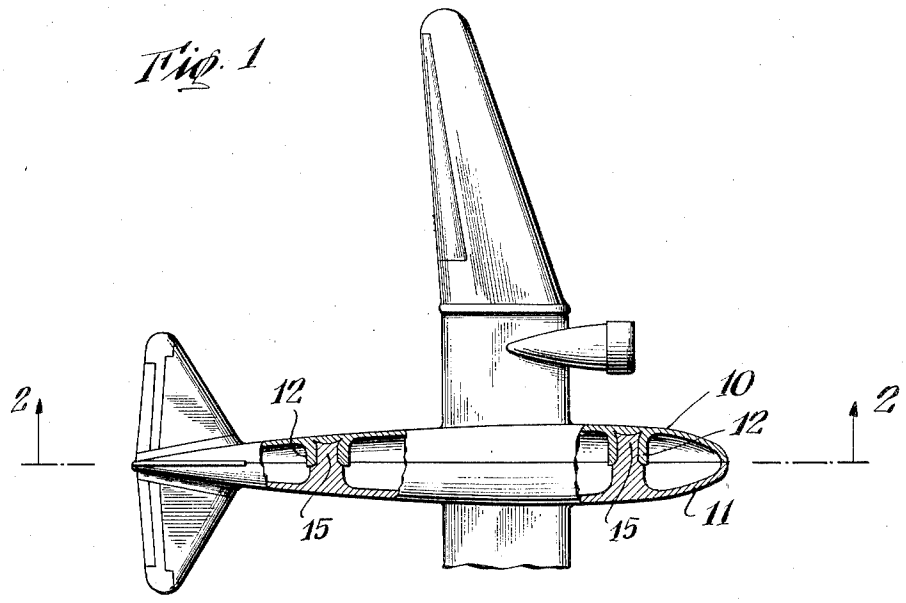


Fig. 2

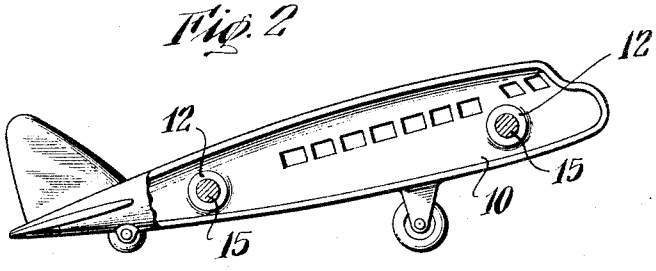


Fig. 3

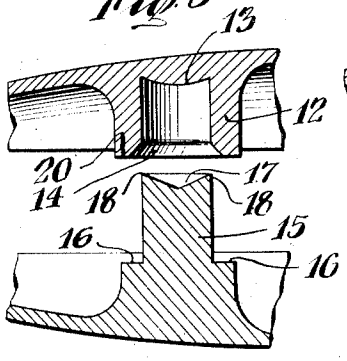


Fig. 4

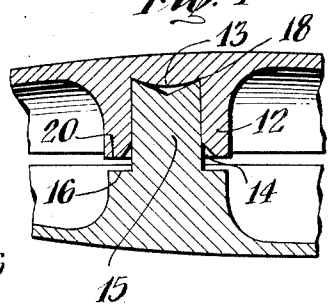
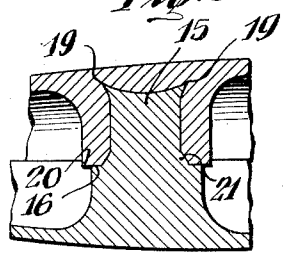


Fig. 5



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Fig. 6

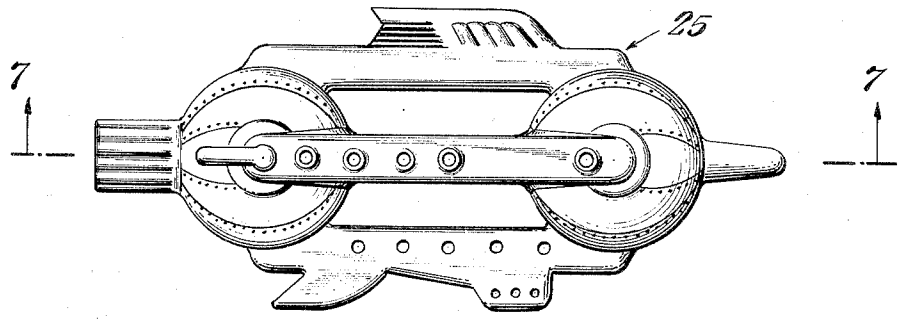


Fig. 7

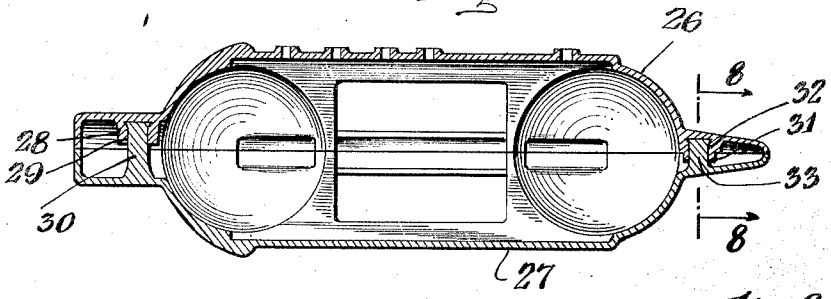


Fig. 9

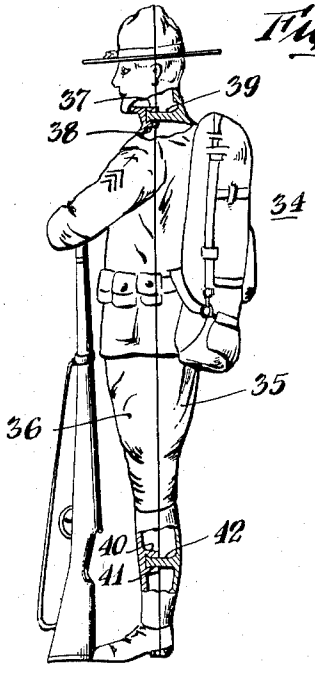
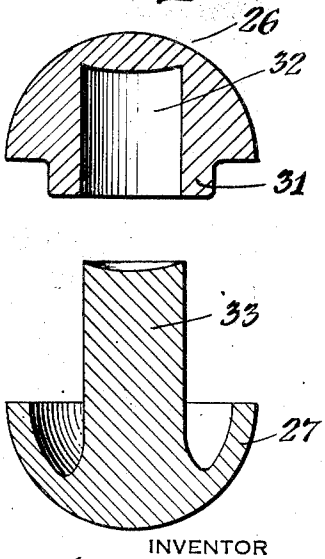


Fig. 8



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2,237,329

TOY ASSEMBLY

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Application October 27, 1937, Serial No. 171,218

2 Claims. (Cl. 46—1)

This invention relates to a structurally and functionally improved toy. It is an object of the invention to furnish a coupling structure for toys, and especially die cast toys, so that an operator possessing minimum skill will have no difficulty in assembling and locking the sections with respect to each other.

A further object of the invention is that of furnishing as an integral part of the sections of a toy the portions of a coupling so that it will not be necessary to handle extra portions or elements in joining the main toy sections together.

Another object is that of constructing a toy and a coupling therefor which, when operated, will virtually preclude of a subsequent separation of the toy sections or any other movement of the same with respect to each other.

An additional object is that of furnishing a toy and a coupling for the sections thereof, such that automatic machinery and methods may largely be employed in coupling the sections and without danger of mutilation of the latter or the need of any expensive dies or other special equipment.

This application is a continuation in part of my prior application Serial No. 24,488, for Toy assembly, filed in the United States Patent Office on June 1, 1935.

With these and other objects in mind, reference is had to the attached sheets of drawings, in which—

Fig. 1 is a fragmentary plan view of one form of unit;

Fig. 2 is a longitudinally sectional view taken along the lines 2—2 and in the direction of the arrows as indicated in Fig. 1;

Figs. 3, 4 and 5 are fragmentary enlarged sectional views showing certain portions of the toy during the several stages of assembly;

Fig. 6 is a side elevation of a still further form of toy;

Fig. 7 is a sectional side view taken along the lines 7—7 and in the direction of the arrows as indicated in Fig. 6;

Fig. 8 is an enlarged transverse sectional view taken along the lines 8—8 and in the direction of the arrows as indicated in Fig. 7; and

Fig. 9 is a side elevation of another form of toy with certain of the parts broken away.

Referring primarily to Figs. 1 to 5, the numerals 10 and 11 indicate die cast (namely, soft deformable and malleable metal alloy) sections of a toy which are to be coupled together to provide a single unitary article. To this end, cooperating sockets and studs are integrally associated with each of the sections. As shown, a pair of sockets 12 integrally form a part of section 10 and a pair of studs 15 integrally form a part of section 11. These assemblies should be located to each side of the center of the unit so that there will be no danger of the sections of the latter turning with respect to each other; it being obvious that if simply a single assembly were provided, the sections might readily be relatively turned.

As illustrated especially in Fig. 4, each of the sockets 12 may have a concave base portion 13 and a surface 14 defining a flaring mouth or entrance surface for the socket. Each one of the studs 15 may present a shoulder portion 16 at a point adjacent its base and have its outer end recessed as indicated at 17, to thus furnish relatively sharp edge portions 18 adjacent such outer ends. At this time it will be observed that the length of stud 15 between the edge portions 18 and the shoulder 16 should be slightly greater than the distance between the outer surface 20 of the socket 12 and the base 13 of the latter. Moreover, it is preferable that the angle at which the surfaces of recess 17 extend should be more acute than the general angularity of surface 13.

It follows that when one of the studs 15 is introduced in one of the sockets as indicated in Fig. 4, surfaces 20 and 16 will be separated when the end of the stud engages the base of the socket. The amount of such separation will be equivalent to the amount of separation between the adjacent meeting edges of sections 10 and 11.

Thereupon, if pressure is brought to bear against the outer faces of these sections, it is obvious that, as shown in Fig. 5, the material of stud 15 will be caused to conform to surface 13 and additionally force the surfaces of the socket adjacent the base of the latter outwardly, as indicated at 19, to provide a keying structure. This structure will be completed upon the adjacent meeting edges of sections 10 and 11 being brought into contact with each other, and thus these sections will be joined against any danger of accidental separation. Also, if the flaring surface 14 is employed, the material of the stud adjacent the shoulder portion 16 will be caused to fill out this recess, as has been indicated at 21 in Fig. 5. This will further contribute to the stability of the finished article and prevent the sections from becoming separated.

In Figs. 6, 7 and 8, a toy 25 has been illustrated which includes sections 26 and 27. Again, in this instance, the sockets 28 have been wholly associated with section 26 while the studs are associated with section 27. This, of course, might be varied as desired, but again it will be noted that a pair of these uniting portions have been provided to each side of the center portion of the toy and—as is preferable—in fact adjacent the ends thereof. The socket members have been indicated at 28 and 32, respectively, and present relatively straight bores 29 and 31, respectively. The studs have been indicated at 30 and 33. As shown particularly in Fig. 8, the ends of the stud may be slightly concave and the base portions of the socket may present a convex surface. Again,

the length of the stud and depth of the socket is such that when the outer end of the former contacts the base of the latter, the adjacent and meeting edges of sections **26** and **27** will be separated. Therefore, by bringing pressure to bear upon the outer faces of the sections, the ends of the studs are caused to key into the base portions of the socket, as clearly shown in Fig. 7, to prevent any accidental separation of such sections.

Obviously, this structure may be employed to maintain sections of any desired types of toys against separation. For example, as shown in Fig. 9, there is involved a toy **34** which provides a replica of a soldier. This toy includes sections **35** and **36**, the former presenting studs **39** and **42**, and the latter socket portions **37** and **40**, furnished with bores **38** and **41**, respectively. Exactly the same procedure as heretofore is resorted to by bringing the sections into juxtaposed relationship and then pressing these sections towards each other to a point at which their edges contact. At this point it will be found that the studs and sockets will have interlocked so as to prevent any subsequent accidental separation thereof.

In all of the foregoing constructions as well as in any alternative forms which might be furnished to include the present invention, it will be appreciated that a toy is furnished which may ideally embrace a die cast construction. The dies may readily be shaped to include any desired number of toy sections with which sockets and studs are integral. As afore brought out, these couplings should preferably be located adjacent the ends of the article and, in any event, to each side of the center of the same, so that, in other words, more than two coupling assemblies are present in each unit. By having the studs and socket members integral with the sections, it is simply necessary to arrange such sections in proper relationship and thereupon, by a suitable apparatus, to press them towards each other to assume a final relationship. Such apparatus may conveniently be so adjusted that the pressure which it will bring to bear will be adequate to furnish the keying structures, but would be inadequate to mutilate or deform the toy sections if the pressure were continued for even an indefinite period. In other words, incident to the increased resistance encountered when the adjacent edges of the sections contact each other, the apparatus would be inoperative to press the sections towards each other to a greater extent. However, the assumption of such final position would automatically result in the formation of the desired coupling.

Thus, among others, the several objects of the invention as specifically afore noted are achieved. Obviously, numerous changes in the construction and rearrangement of the parts might be resorted to without departing from the spirit of the invention as defined by the claims.

Having thus described the invention, what is claimed is:

1. A die cast metallic toy formed of a soft deformable, malleable metal alloy including an elongated hollow body composed of a pair of longitudinally extending concave sections presenting smooth unbroken outer surfaces adapted to have their marginal edges brought into contact with each other under tension, a pair of deformable studs integral with and extending from the base of one of said sections and die cast therewith, said studs being circular in cross section and having substantially the same radius throughout their length and having a dish-shaped substantially arced concave depression extending inwardly and upwardly in their outer ends and an annular substantially knife edge upon their lower outer portion, a pair of deformable socket members integral with and extending from the base of the other of said sections and die cast therewith, said socket members having bottoms substantially conforming in shape to the bottoms of said studs but having a lesser arc than the arc of the concave depressions of said studs, said studs and members being disposed upon opposite sides of the center portions of said sections and being formed of the same material as that which provides said sections the length of said studs being such that those edges of the sections which are to be brought into abutting relationship will be spaced upon said studs being initially introduced into said sockets and to the full depth of and in contact with the base portions of the latter, subsequent further projection of said studs into said sockets resulting in a deformation of said sockets and studs and a spreading of said knife edges to couple said sections to each other, and the distance initially separating the adjacent edges of the sections defining the amount of movement of said sections towards each other and necessary to cause such deformation.

2. A die cast metallic toy including an elongated hollow body composed of a pair of longitudinally extending concave wall sections adapted to have their adjacent edges brought into contact with each other, a pair of deformable studs die cast integral with and extending from the base of one of said sections, said studs being circular in cross section and having substantially the same radius throughout their length and having a dish-shaped substantially arced concave depression extending inwardly and upwardly in their outer ends and an annular substantially knife edge upon their lower outer portion, a pair of deformable socket members integral with and extending from the base of another of said sections and die cast therewith, said socket members having bottoms substantially conforming in shape to the bottoms of said studs but having a lesser arc than the arc of the concave depressions of said studs, the walls providing said sections being of thin gauge and as such relatively crushable, said walls presenting smooth unbroken outer surfaces and being imperforate in line with said studs and socket members, the pairs of studs and socket members including relatively thickened and rigid distortion-resistant bodies, said studs and members being disposed upon opposite sides of the center portions of said sections and being formed of the same material as that which provides said sections, the length of said studs being such that those edges of the sections which are to be brought into abutting relationship will be spaced upon said studs being initially introduced into said sockets and to the full depth of and in contact with the base portions of the latter, subsequent further projection of said studs into said sockets resulting in a deformation of said sockets and studs to couple said sections to each other, the distance initially separating the adjacent edges of the sections defining the amount of movement of said sections towards each other and necessary to cause such deformation, the walls of the opposite sections with said studs and sockets deformably coupled and being in such edge to edge contact that said walls are free from crushing deformations.

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