

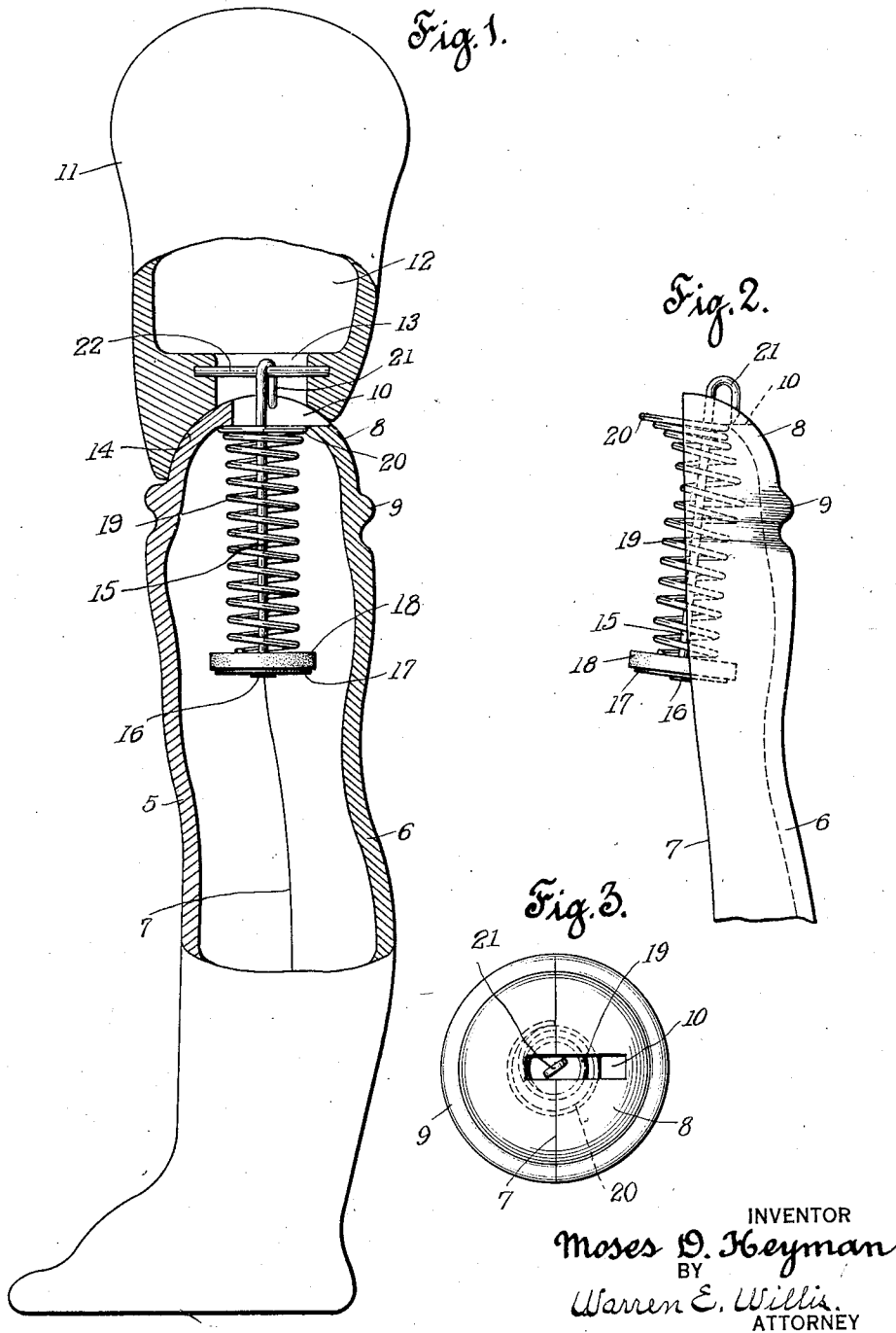
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DOLL LIMB ARTICULATOR

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DOLL-LIMB ARTICULATOR.

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This invention relates to improvements in means for connecting the abutting ends of hollow sectional elements and has special reference to the articulation of the limbs of the

5 dolls.

Each limb is composed of two or more members having ball-and-socket joints whereby one member can be moved relative to the other in assuming different positions, as extended at length substantially straight or folded at an angle, as in the position of sitting.

Such joints have heretofore been held in frictional contact by elastic to tensional means, passing from one member to another through openings therein.

If an elastic band, such as rubber, be used, deterioration soon takes place, the rubber rapidly losing its efficiency and the articulated members become loose to the point of failure in functioning; such bands are also subject to rupture by the exertion of a pull on the jointed members, causing destruction of the object.

Another even more common method of connecting the articulated members is by a coiled wire tension spring, its ends being secured in the respective abutting members.

Here too, if the normally abutting members be drawn apart to stress the spring beyond its elastic limit, its failure is certain and the article is ruined.

It is therefore the principal object of the present invention to provide a spring so arranged as to draw the members into proper intimate relation and which, due to the proportions of its coil, acts as a positive stop preventing separation of the connected elements under any strain that can be imparted to them less than actual breakage.

A further feature is in the provision of means to silence the movement of parts in assuming different postures.

Another purpose is to produce an articulating device that is easily assembled with relation to the members, is substantially indestructible and capable of unlimited service.

These advantages are secured by the novel combination and arrangement of simple and inexpensive parts hereinafter described and shown in the accompanying drawing forming part hereof, and in which:—

Figure 1 is a side elevational view of a conventional type of doll's leg, broken away to disclose the application of an embodiment 55 of the invention.

Figure 2 is a similar view of parts of the same prior to assembly.

Figure 3 is a top plan view of the lower member of the limb before assembly.

The structure illustrated is typical of modern doll construction, made of papier mâché or like material, run when in a plastic condition into moulds whereby a desirable shape is obtained.

In the leg shown the lower part, from the knee down including the foot, is formed in two hollow longitudinal sections, 5 and 6 respectively front and rear, eventually connected along a sinuous line 7 at the sides, this junction being unobservable in the finished product.

These elements together form at the top a semispherical seat member 8 having an outstanding band 9 at its base blending into the upper portion of the limb and formed in the seat 8 is a narrow slot 10 formed partially in both elements 5 and 6 but more deeply into the latter element for a reason that will later appear.

The upper or thigh member 11, also usually made in two parts, contains a chamber 12 having an opening 13 leading through to the concave socket 14, conforming to the spherical seat 8 and it will be seen that the socket is so formed as to make contact with the band 9, which acts as a stop therefor when the leg is extended straight out and also when the joint is folded at an angle, the socket being shaped to permit such movement.

The structure of the limb is however unimportant except as illustrating the application of the invention which ensues.

A stout wire rod 15 is upset at its end 16 after being passed through a metal washer 17 and seated on the washer is a disc 18 of larger diameter and considerable thickness composed of fiber or similar semisoft material, this disc acting as a cushion to prevent noise when brought into contact with the interior of the limb.

A coiled compression spring 19 rests at its lower end on the disc 17 to loosely encircle

the rod and has an expanded upper end 20 impinging against the interior surface of the ball seat 8.

The rod 15 is formed at one end into an open loop 21 passing through the narrow slot 10 into the opening 13 and there engaging a bar 22 fixed rigidly lengthwise and centrally of the opening, the length of the re-entrantly turned portion of said loop, which constitutes a hook, from its bight to the end of its hooked portion, being only slightly less than the aggregate of the space distances between the several coils of the spring 19, thus preventing displacement of the hook from the bar 22 and consequently disassociation of the members 5-6 and 11.

In operation the rod is assembled with the spring, disc and washer as a unit and disposed in the rear member 6 before it is secured to the front member 5, the hook 21 at that time resting on the bottom of the slot 10 against which it is forcibly drawn by the spring 19.

When assembled with the member 11, the hook 21 is raised and connected over the bar 22, thus holding the upper and lower members firmly together by the pressure exerted by the spring.

The frictional effect of the ball seat 8 and socket 14 suffices to retain the parts in any angular adjustment but permits changing positions, the soft edge of the disc 18 making no noise when coming in contact with the interior of the leg.

Particular attention is called to the fact that the spring 19 is so proportioned as to close its coils tightly upon drawing the limb members apart and before the ball seat has been retracted from its socket such distance as might interfere with its proper replacement, therefore acting as a stop in limiting relative action.

Although I have described my improvements with considerable detail and with respect to certain particular forms of my invention, I do not desire to be limited to such details since many changes and modifica-

tions may well be made without departing from the spirit and scope of my invention in its broadest aspect.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. An articulating device for two hollow abutting members having slots at their abutting ends, said device comprising a bar fixed transversely in the slot of one member, a rod having a washer fixed at one end and a hook at the other end, said hook being engageable with said bar, a coiled compression spring encircling said rod to thereby hold said members in abutting relation, said spring contacting at one end with the inner portion of said other member, the aggregate spaces between the coils of said spring exceeding but slightly the length of said hook, and a cushion element intermediate said washer and spring end, said element being in excess of the diameter of the washer and adapted to contact the interior of the member in which it is disposed upon relative movement of said members.

2. A doll limb articulation comprising in combination with a hollow limb composed of two sections having ball-and-socket joints and containing communicating passages, one of the passages being a narrow slot, of a bar fixed lengthwise in the other passage, a hook engaging said bar, a rod extending from said hook through the passages into the other limb section having the narrow slot, said rod being upset, a washer fixed on the upset end of said rod, a coiled compression spring encircling said rod and abutting the inner end of the last named limb and said washer respectively whereby the limb sections are drawn together and a soft cushion disc interposed between said spring and washer, said disc being of greater diameter than the washer.

Signed at New York, in the county of New York and State of New York, this 24th day of August, A. D. 1926.

MOSES D. HEYMAN.