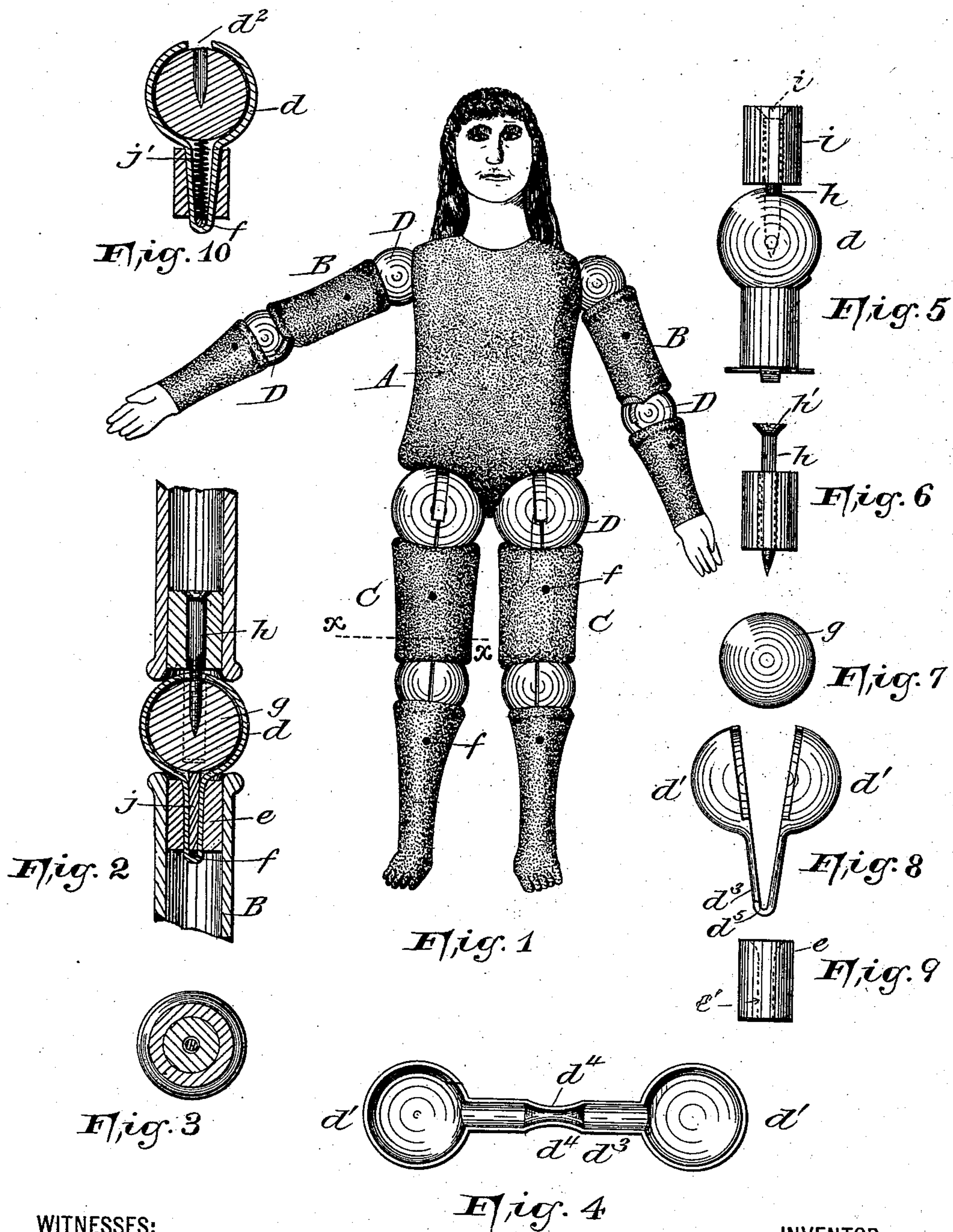


(No Model.)

E. VERPILLIER.
JOINT FOR DOLLS.

No. 487,861.

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WITNESSES:

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UNITED STATES PATENT OFFICE.

EMIL VERPILLIER, OF NEWARK, NEW JERSEY, ASSIGNOR OF ONE-HALF TO
CHARLES W. GRAVES, OF SAME PLACE.

JOINT FOR DOLLS.

SPECIFICATION forming part of Letters Patent No. 487,861, dated December 13, 1892.

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To all whom it may concern:

Be it known that I, EMIL VERPILLIER, a citizen of the United States, residing at Newark, Essex county, New Jersey, have invented a certain new and useful Improvement in Joints for Dolls, Mechanical Toys, and for other purposes to which the same may be adapted; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention has reference to dolls, and has for its object to provide a doll having any two of its parts jointed together by means of a flexible rotary connection, whereby the legs or arms of the doll can be moved into any desirable position in the manner of the movements of human beings, while at the same time any two of such connected parts of the doll are capable of a rotary movement about a pin or screw employed in connection with a ball-and-socket joint.

The invention therefore consists of certain novel arrangements and combinations of parts, such as will be hereinafter more fully described, and finally embodied in the clauses of the claim.

In the drawings, in which similar letters of reference are employed to indicate corresponding parts in each of the several views, Figure 1 is a front view of a doll provided with joints embodying the nature of my invention. Fig. 2 is a vertical section of one of the joints to more clearly illustrate the arrangement and construction of the several parts comprising the improved joint. Fig. 3 is a horizontal section taken on line *x* in Fig. 1, and Fig. 4 is a plan of a sheet-metal blank provided with spheroidal portions, which are bent, as in Figs. 1 and 2, to form the socket for a ball used in connection with the joint. Fig. 5 is a front elevation of the parts comprising the joint before they are inserted in position in any two parts of the doll-body. Figs. 6, 7, 8, and 9 are detail views of the several parts comprising the improved flexible and rotary joint, and Fig. 10 is a vertical section of a slightly-modified form of construction of the ball-and-socket joint.

The chief merits of my invention are, first,

durability and simplicity of construction; second, adaptability to any article; third, easiness of its adjustment and repairs, and lastly, superiority to any similar construction now in use.

In the drawings, A indicates the body or trunk of a doll or other figure. B are the arms, and C the legs.

The main feature of my invention is the construction of a flexible rotary joint or connection D, adapted to be used in connecting any two parts—as, for instance, the two arm portions B or an arm portion B with the trunk A, or the trunk A with a leg portion C, or any two leg portions C, as will be clearly evident from the accompanying drawings.

The joints or connections D, which are alike in all instances, comprise therein a hollow globe or socket *d*, composed of any suitable material, but preferably made from sheet metal. When made from sheet metal, the parts are preferably struck up by means of a suitable die in the shape shown in Fig. 4 and are bent to form the two spheroidal sections *d'*, as clearly illustrated in Fig. 8. These parts are closed upon each other to form the hollow globe or sphere *d*, as will be seen from Figs. 1, 2, and 5, having an opening or slot *d*² formed therein and terminating in a hollow post *d*³, which, owing to the curved or cut-away portions *d*⁴, (see Fig. 4,) is formed with an opening or hole *d*⁵ for the reception of a pin or nail *f*, as will be seen from Figs. 2 and 10. Encircling said post *d*³ is a cylindrical sleeve *e*, provided with a longitudinally-arranged hole *e'*, into which said post *d*³ is fitted, and the said sleeve is fitted into one of the hollow arm-sections B or a leg-section C of the doll, being cemented therein and held in position by the pin or nail *f*, which passes through the arm or leg section and through the opening or hole *d*⁵ in the end of the post *d*³, projecting below the sleeve *e*, as clearly shown in said Fig. 2.

Within the hollow globe or sphere *d*, formed by the two spheroidal sections *d'*, is a solid ball *g*, either of wood or any other suitable material, into which is securely fastened the end of a screw or pin *h*, the upper portion of which extends above said ball *g* and passes through the slot or opening *d*² in said sphere

or globe *d*. Upon the upper end of said screw or pin *h* is loosely and rotatably fitted a second sleeve *i*, provided with a tubular portion *i'*, and a head *h'* on said screw or pin prevents the displacement of these parts. Said sleeve *i*, as will be clearly seen from Fig. 2, is firmly cemented in the opposite arm or leg section or the trunk A of the doll, as will be understood.

Aside from its utility in securing my improved flexible joint in the end of one of the doll-sections said sleeve *e* also acts to confine and compress the two parts comprising the post *d'* to close the socket portions around the ball, thereby producing a complete joint portion adapted to be secured in the hollow limb or member of any style of doll, the screw and the upper sleeve being connected with the ball in the manner just described, and thereby forming part of the flexible joint. It will thus be seen that owing to the pin or screw *h*, which is firmly embedded or secured in the solid ball *g*, the several portions of the doll are capable of a rotary motion about the central longitudinal axis of the sleeve *i*, caused by the loose fit of the upper portion of said screw or pin *h* within said sleeve, while at the same time the two jointed portions of the doll are flexibly connected and can be moved in the manner of the joints of a human body, the spheroidal sections *d'* being capable of a movement about the surface of the ball *g* and the movements of these parts being limited to the movement of the upper portion of the screw or pin *h* within the slot *d''*.

In order to keep the proper tension upon the ball *g* and to cause a frictional engagement of the same with the inner surfaces of the hollow sphere or globe *d*, I may arrange within the hollow post *d'*, directly above the pin or nail *f*, a pressure-exerting device, such as a piece of stiff leather *j*, or other similar material, as shown in Fig. 2, or I may use a coiled spring *j'*, as in Fig. 10, which exert a normal pressure against the lower portion or surface of the ball *g*, whereby said ball when revolving in its socket or bed is retained in any position in which it may have been placed. It will thus be seen that by my improved form of joint connecting any two parts of a doll the movements of such parts are more natural than in the constructions as heretofore made.

Having thus described my invention, what I claim is—

1. In a joint for dolls or the like, a ball-and-socket joint consisting, essentially, of a hollow sphere or globe provided with a hollow post, a solid ball capable of revolving in said globe or sphere, a sleeve arranged on said hollow post, a screw or pin firmly secured in said solid ball and projecting above the same, and a sleeve loosely and rotatably arranged upon the upper end of said screw or pin, substantially as and for the purposes set forth.

2. In a joint for dolls or the like, a ball-and-socket joint consisting, essentially, of a hollow sphere or globe provided with a hollow post,

a solid ball capable of revolving in said globe or sphere, a sleeve arranged on said hollow post, a screw or pin firmly secured in said solid ball and projecting above the same, a sleeve loosely and rotatably arranged upon the upper end of said screw or pin, and a pressure-exerting device arranged in said hollow post, adapted to exert a pressure against the surface of said solid ball, substantially as and for the purposes set forth.

3. In a doll or the like, the combination, with any two parts thereof, of a flexible rotary joint, consisting, essentially, of a hollow sphere or globe provided with a hollow post, a solid ball capable of rotating in said hollow sphere or globe, a sleeve arranged on said hollow post, said post projecting below said sleeve and being provided with an opening or hole and a pin or nail arranged in one of said parts of the doll and passing beneath said sleeve and through the projecting end of said post, a screw or pin firmly secured in said solid ball and projecting above the same, and a sleeve loosely and rotatably arranged upon the upper end of said screw or pin, said sleeve being firmly secured in the other section of the doll, substantially as and for the purposes set forth.

4. In a doll or the like, the combination, with any two parts thereof, of a flexible rotary joint consisting, essentially, of a hollow sphere or globe provided with a hollow post, a solid ball capable of rotating in said hollow sphere or globe, a sleeve arranged on said hollow post, said post projecting below said sleeve and being provided with an opening or hole and a pin or nail arranged in one of said parts of the doll and passing beneath said sleeve and through the projecting end of said post, a screw or pin firmly secured in said solid ball and projecting above the same, a sleeve loosely and rotatably arranged upon the upper end of said screw or pin, said sleeve being firmly secured in the other section of the doll, and a pressure-exerting device arranged in said hollow post, adapted to exert a pressure against the lower surface of said solid ball, substantially as and for the purposes set forth.

5. A doll, substantially as described, comprising therein hollow members, a sleeve arranged in each member, a ball-and-socket joint connected with one of said sleeves and the other sleeve being loosely and rotatably arranged in connection with the ball of the joint, whereby the member of the doll is capable of a rotary movement about the longitudinal axis of the one sleeve, but is also capable at the same time of a flexible movement in any plane different to the plane of rotation, substantially as and for the purposes set forth.

EMIL VERPILLIER.

Witnesses:

L. DUMONT,
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