

[54] **GRASPING HAND FOR DOLL**

[72] Inventors: **J. Stephen Lewis**, Pacific Palisades;
Harold B. Collins; **Jurgis Sapkus**,
both of Manhattan Beach; **Juanito**
O. Villanueva, Lawndale, all of
Calif.

[73] Assignee: **Mattel, Inc.**, Hawthorne, Calif.

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[56] **References Cited**

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Primary Examiner—Louis G. Mancene

Assistant Examiner—D. L. Weinhold

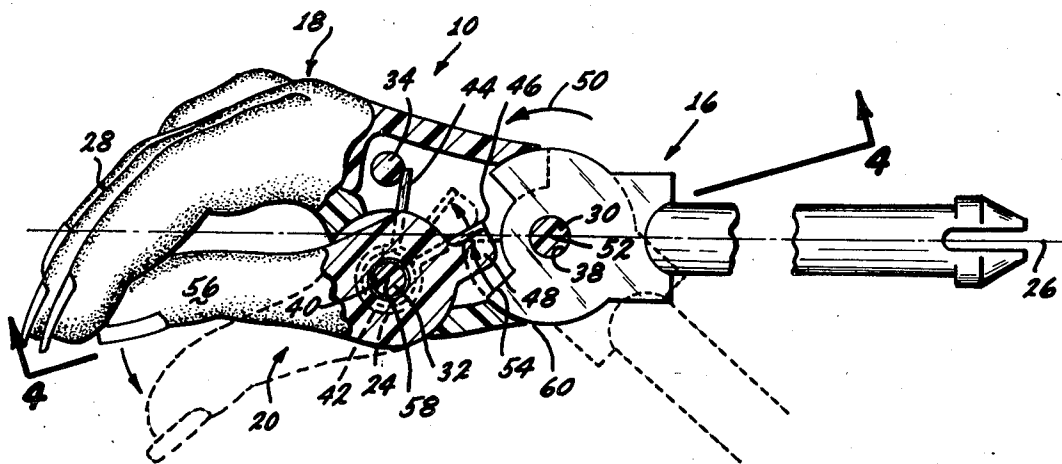
Attorney—Seymour A. Scholnick

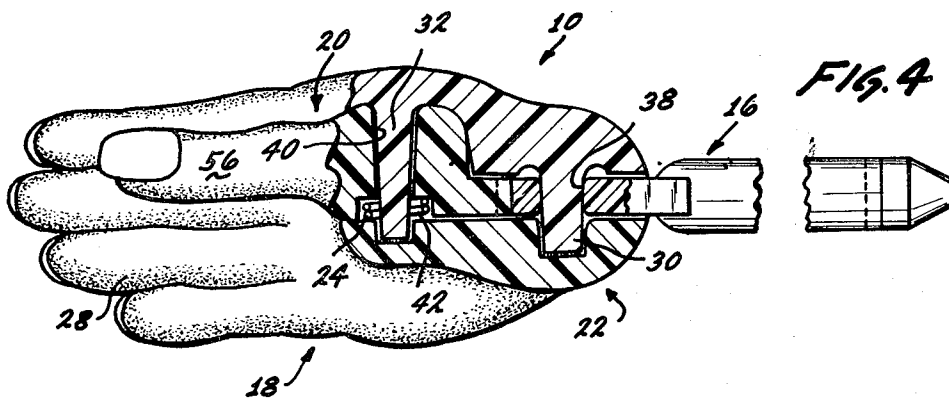
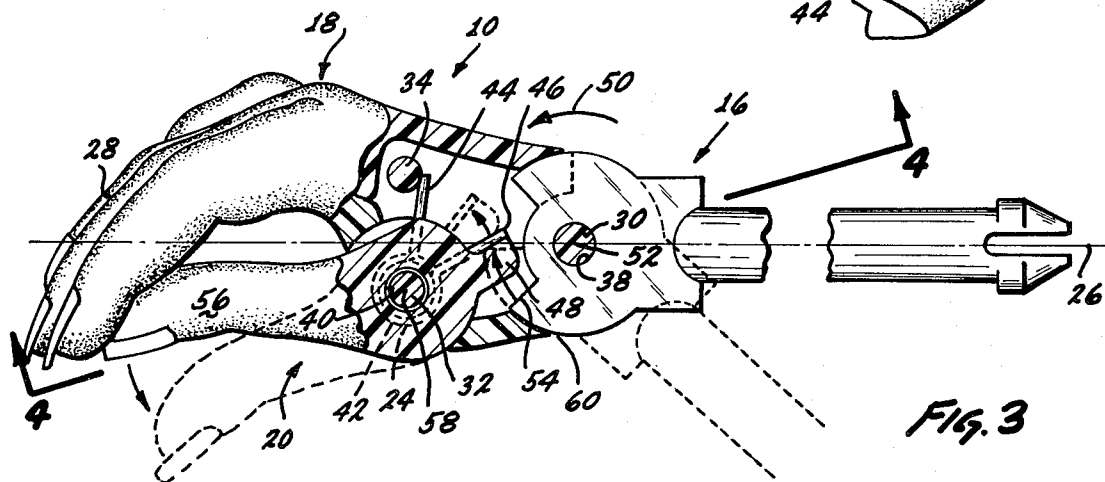
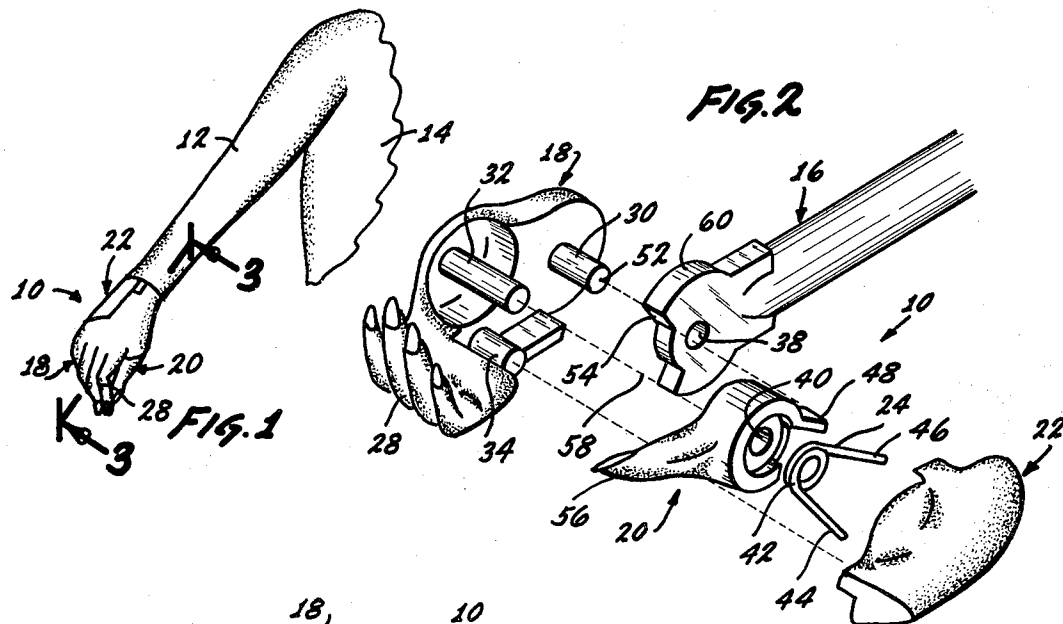
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ABSTRACT

A hand assembly for a doll, which includes a pivotally mounted thumb for grasping and releasing objects, the position of the thumb relative to the fingers being controlled by pivoting of the entire hand rather than directly moving the thumb. The assembly includes a wrist armature that can be mounted on a doll arm, a hand member with a multiple finger portion pivotally mounted on the wrist armature, a thumb member pivotally mounted on the hand member, and a spring connecting the thumb and hand members to urge the thumb toward a closed position. When the hand member is pivoted in a predetermined direction on the wrist armature, a part of the wrist armature pivots the thumb faster than the hand member so that the thumb opens on the finger portion of the hand. When the hand is pivoted to an extreme position the wrist armature maintains the hand posed with the thumb opened.

6 Claims, 4 Drawing Figures





GRASPING HAND FOR DOLL

BACKGROUND OF THE INVENTION

This invention relates to dolls and more particularly to a hand assembly for dolls.

The entertainment value of dolls can be enhanced by constructing them so that the body parts move in a realistic manner, as by providing a hand that can open and close to grasp and release objects. In the case of fashion dolls which may realistically represent grown persons, and which therefore may have relatively small hands for a doll of moderate overall size, manipulation of the doll parts may be difficult. If a pivotally mounted thumb on a fashion doll had to be operated by directly pulling on the thumb against a spring force, difficulty might be encountered by children in grasping the thumb while inserting an object between it and the fingers. Remote control mechanisms could be utilized such as those which require pressing of levers on the doll or squeezing of the doll arm, but in some instances this leads to artificiality and to complexity, particularly where the doll hands are mounted to enable turning at the wrist. Dolls, and particularly the relatively delicate and realistic appearing fashion dolls, could be enhanced if a relatively simple hand mechanism were available which could be easily operated to open and close by a child, without requiring direct manipulation of the thumb or fingers of the doll and yet by applying forces in its hand region, and which also could be posed with the hand open or closed even when no objects were present.

SUMMARY OF THE INVENTION

In accordance with one embodiment of the present invention, a doll hand apparatus is provided which enables both opening and closing of the thumb on a finger portion by bending the entire hand at the wrist. The apparatus includes a spring that urges the thumb towards a closed position to enable grasping of objects, but the hand can be posed with the thumb in a fully opened or fully closed position. The assembly includes a wrist armature for reception in a doll arm, a hand member pivotally mounted on the armature, a thumb member pivotally mounted on the hand member for pivoting towards and away from finger portions of the hand member, and a spring that urges the thumb closed on the finger portions. The armature has a first operating portion that abuts an end of the thumb member as the wrist member is pivoted on the armature, to pivot the thumb in the same direction as the hand but in a greater amount so that it moves with the hand but opens relative to the finger portions. If an object is placed between the opened thumb and finger portions and the hand is released, the spring moves the thumb towards the finger portions to tightly grasp the object. The armature has a second operating portion extending circumferentially about the axis pivoting of the hand member thereon, which engages the thumb member when it reaches a maximum opening position, to maintain the thumb member fully opened so that the doll hand can be posed with the thumb opened.

The novel features of the invention are set forth with particularity in the appended claims. The invention will be best understood from the following description when read in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a partial perspective view of a doll, showing the right hand assembly thereof in a closed configuration;

FIG. 2 is an exploded perspective view of the hand assembly of FIG. 1;

FIG. 3 is a partially sectional view taken along the line 3—3 of FIG. 1; and

FIG. 4 is a partially sectional view taken along the line 4—4 of FIG. 3.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to the figures, the hand assembly 10 of the invention is designed to be mounted on the arm 12 of a fashion doll 14, to provide a hand of realistic appearance and which also can be manipulated in a realistic manner. The assembly includes a wrist member or armature 16, a hand member 18, a thumb member 20, an end covering 22, and a spring 24. The parts can be completely assembled and tested prior to installation on the arm 12 of the doll, and such installation can be readily accomplished by inserting the armature 16 into a hollow arm that is designed to receive and hold it. The armature 16 is designed to be mounted so it can be turned about an axis 26, so the hand can be oriented with the palm up or down or in some other orientation. All of the parts of the assembly, with the possible exception of the spring 24, are easily constructed by injection molding, to enable low cost mass production.

The hand member 18 has a multiple finger portion 28 representing all fingers except the thumb, and has three posts 30, 32 and 34 extending from the side of the hand where the index finger 36 is located. The armature 16 has a hole 38 that receives the post 30 to provide pivotal mounting of the hand member 18 on the armature. The thumb member 20 has a hole 40 that receives the post 32 to provide pivotal mounting of the thumb member 20 on the hand member. The spring 24 has a looped central portion 42 that is held on the post 32 over the thumb member to provide secure retaining of the spring. The end covering 22 fits over and is joined by adhesive or the like to outer ends of the three posts, to securely hold the parts together and conceal their mode of operation.

The spring 24 has one end 44 that bears against the post 34 on the hand member, and another end 46 that bears against an operating portion 48 of the thumb member, to urge the thumb to pivot toward the position where it is against, or closed, on the finger portion 28 of the hand member. The thumb can be manually opened on the rest of the hand, but is designed for automatic opening when the hand member 18 is pivoted in a predetermined direction, as indicated by arrow 50, about its axis of pivoting 52 on the wrist armature 16. When the hand member 18 is pivoted in the direction of arrow 50, a wall 54 on the armature moves the operating portion 48 of the thumb member to cause the thumb member to pivot toward an open position.

When the hand member is pivoted in the direction of arrow 50, the thumb member 20 pivots in the same rotational direction but is made to pivot much faster or to a much greater angle. As a result, the thumb portion 56 of the thumb member opens on the finger portion 28

of the hand member. The wall 54 on the armature, which serves as a thumb opening portion, extends primarily radially, or in other words with a primarily radial directional component, from the axis 52 about which the hand member is pivoted on the armature. The wall 54 initially contacts the operating portion 48 of the thumb member at a location between the axes of pivoting 58 of the thumb member 20 and 52 of the hand member 18. The operating portion 48 of the thumb member is relatively close to the axis of pivoting 58 of the thumb member, as compared to the outer end of the thumb portion 56, so that the thumb member is pivoted rapidly, and moves to an open position even though the hand member is pivoted only a small amount on the armature.

If the hand member 18 is pivoted in a direction 50 as far as it can be pivoted, then another wall 60 of the armature will bear against the operating portion 48 of the thumb member. The wall 60 extends substantially circumferentially about the axis of pivoting 52, so that it does not tend to further pivot the thumb member and, in fact, prevents return of the thumb and hand members back to their original positions. The force of the compressed spring 24 therefore does not tend to return the hand to its original position, and the hand remains posed in a bent orientation and with the thumb fully opened on the finger portions. Furthermore, the spring force which presses the operating portion 48 of the thumb member against the armature wall 60 produces friction that helps to keep the hand posed in a bent configuration, with the thumb fully opened, so it remains therein until a child pivots the hand in a direction opposite to arrow 50.

Thus, the invention provides a doll hand apparatus of relatively simple construction, which can be completely assembled and tested apart from the rest of the doll, and which can be installed as a unit in a doll arm. The hand can open and close on objects to grasp and release them, and such opening and closing can be controlled by pivoting of the entire hand, so that a child does not have to grasp the small thumb of a fashion doll to operate the hand. The hand also can be posed with the thumb fully opened, by merely pivoting the hand to an extreme downward position. Only a relatively small amount of hand pivoting is required to open or close the thumb so the hand appears natural at all orientations.

Although particular embodiments of the invention have been described and illustrated herein, it is recognized that modifications and variations may readily occur to those skilled in the art, and consequently, it is intended that the claims be interpreted to cover such modifications and equivalents.

What is claimed is:

1. A doll hand apparatus comprising:

- a hand member having a finger portion forming multiple fingers;
- a thumb member pivotally connected to said hand member, said thumb member having a thumb portion movable towards and away from said finger portion of said hand member and said thumb member having an operating portion;
- a wrist member pivotally supporting said hand member to enable it and the thumb member pivotally mounted thereon to be pivoted to different positions; and

a spring coupled to said thumb member to urge it towards said multiple finger portion of said hand member;

said wrist member having a thumb-opening portion in the path of said operating portion of said thumb member for abutting it, whereby to cause said thumb to automatically open when said hand is pivoted.

2. The doll hand apparatus described in claim 1 wherein:

said hand member has two posts extending towards the thumb member from one side of the hand; said thumb member is pivotally mounted on a first of said posts; said wrist member is pivotally mounted on a second of said posts; and including an end covering member mounted over ends of said posts to retain said thumb and wrist member on said hand member.

3. The doll described in claim 1 wherein:

said wrist member has a surface extending substantially circumferentially about its axis of pivotal connection to said hand member, said surface located to contact said operating portion of said thumb member after a predetermined degree of pivoting of said hand member relative to said wrist member of which said thumb is open, whereby spring forces do not urge return pivoting of the hand member so it remains posed with the thumb open.

4. The doll described in claim 1 wherein:

said operating portion of said thumb member is located opposite said thumb portion, with respect to the axis of pivoting of said thumb member on said hand member, and said opening portion of said wrist member is located to contact said operating portion of said thumb member at a location between the axis of pivoting of said thumb member on said hand member and the axis of pivoting of said hand member on said wrist member, whereby said thumb moves in the same direction as said finger portion but faster, so that the thumb opens on the finger portion.

5. In a doll, the improvement comprising:

- an armature;
- a hand member mounted on said armature for pivoting about a first axis, said hand member having a finger portion;
- a thumb member pivotally mounted on said hand member, and having a thumb portion for movement toward and away from said finger portion, and
- a spring coupling said thumb and hand members for urging said thumb portion toward said finger portion;
- said armature having first and second opening portions for successively contacting said thumb member as said hand member is pivoted in a predetermined direction about said first axis on said armature, said first opening portion extending with a radial direction component from said first axis to pivot said thumb member open and said second opening portion extending substantially circumferentially about said first axis to keep said thumb member open, whereby to pose said hand with the thumb open.

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6. The improvement in a doll described in claim 5 wherein:

said thumb member is elongated, with said thumb portion located at one end thereof and an operating portion located at an opposite end thereof, and said thumb member is pivotally mounted on said hand member at a location in between its thumb and operating portions; and said first opening portion of said armature is posi-

tioned to initially contact said operating portion of said thumb member at a location in between said first axis where said hand member is pivotally mounted on said armature and the axis of pivotal mounting of said thumb member on said hand member, whereby to pivot the thumb member in the same direction as the hand member but to a greater angle.

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