Sept. 12, 1933. D. ZAIDEN 1,926,574

DETACHABLE EYE STRUCTURE FOR DOLLS

Filed July 29, 1932

Fig. 1

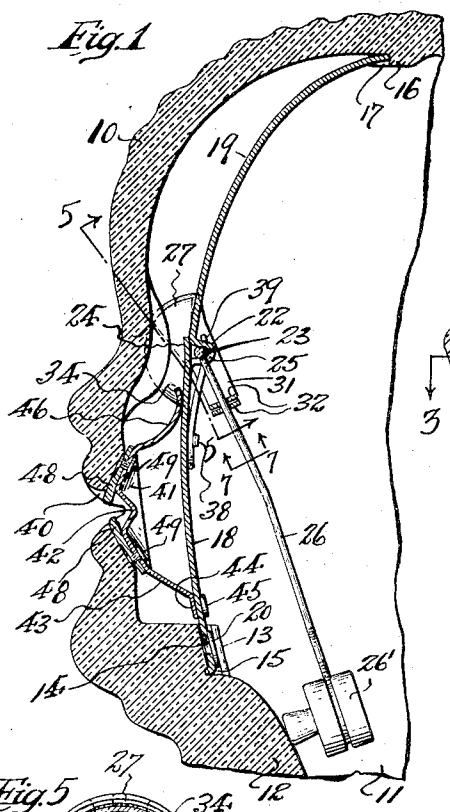


Fig. 2

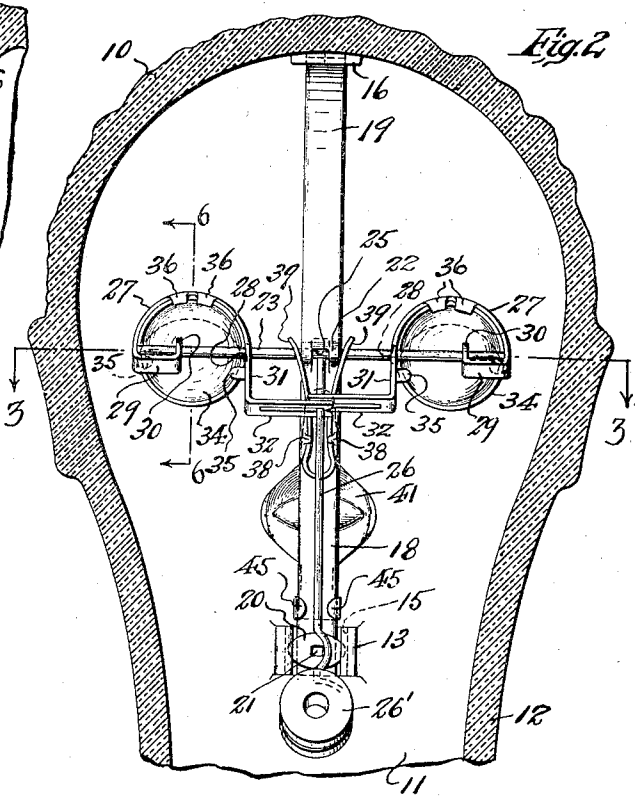


Fig. 5

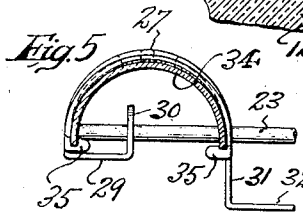


Fig. 7

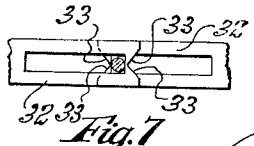


Fig. 4

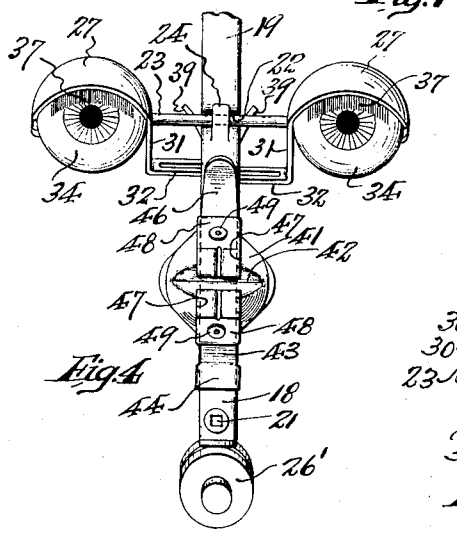


Fig. 3

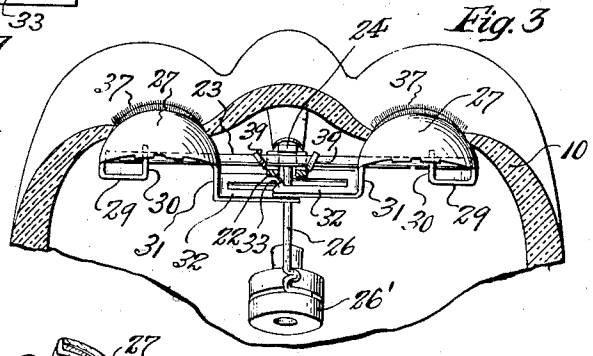
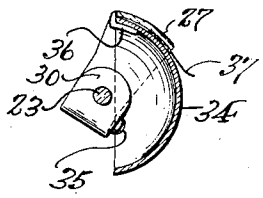


Fig. 6



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Patented Sept. 12, 1933 1,926,574

UNITED STATES PATENT OFFICE

1,926,574

DETACHABLE EYE STRUCTURE FOR DOLLS

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Application July 29, 1932. Serial No. 625,666

7 Claims. (Cl. 46—40)

This invention relates to improvements in movable eye structures for doll heads having means to detachably support the same within a doll head in operative relation thereto; this invention having reference, more particularly, to improvements in the general type and kind of eye structure disclosed in my United States Letters Patent, No. 1,876,381, dated Sept. 6, 1932.

This invention has for its principal object to provide a very simple and comparatively inexpensive form of eye structure in which the parts have been greatly reduced in number, and cooperatively related in such novel manner as to avoid necessity for use of various parts heretofore required. With this in view, the present invention provides a novel form and construction of detachable carrier or supporting member, which in preferred form is provided with a novel cross arm bearing as a unitary part thereof; the invention also provides a new form eyeball and eye-lid element having novel means for operatively relating the same to the cross arm and pendulum lever of the structure.

Another object of the invention is to provide a simplified form and arrangement of spring means for yieldably relating the eye elements to the eye sockets of the doll head.

Another object of the invention is to provide, in adjustably supported relation to and upon the carrier or supporting member of the eye structure, a novel form and construction of tongue and teeth plate.

Other objects of this invention, not at this time more particularly enumerated, will become apparent from the following detailed description of the same.

An illustrative embodiment of this invention is shown in the accompanying drawing, in which:—

Fig. 1 is a vertical longitudinal section, in part, of a doll-head equipped with the improved eye structure according to the present invention; Fig. 2 is a transverse section of the same, looking to the left in Fig. 1; Fig. 3 is a horizontal section, taken on line 3—3 in Fig. 2; Fig. 4 is a front face view of the novel detachable movable eye structure, removed from the doll-head; Fig. 5 is a fragmentary sectional view, taken on line 5—5 in Fig. 1; Fig. 6 is a sectional view, taken on line 6—6 in Fig. 2 and Fig. 7 is a sectional view on the line 7—7 of Fig. 1.

Similar characters of reference are employed in the above-described views to indicate corresponding parts.

Referring to the drawing, the reference character 10 indicates a doll-head of the usual hollow construction having a bottom opening 11 in its neck-portion 12. The doll-head may be made of any suitable material, such, for example, as a molded plastic material which becomes rigid when hardened. Formed in the doll-head are the usual eye-socket openings, and also a mouth opening. Preferably molded as an integral part of the doll-head, within the neck-portion thereof, is a boss 13 having a countersunk seat 14, in the opposite side walls of which are formed indented latch slots 15. Also preferably molded as an integral part of the doll-head, at and within the top thereof, is a boss 16 having a V-shaped notch 17 formed in its forward end.

The improved eye-structure, according to the present invention, comprises a unitary detachable carrier or supporting member consisting of a strip of springy metal having a substantially straight lower end portion 18 and a curved upper end portion 19 having resilient characteristics. Rotatably mounted upon the straight lower end portion 18 of said carrier or supporting member, adjacent to the lower extremity thereof, is a latch 20 of turn-button form, the same having an axial socket 21 of substantially rectangular cross-sectional shape, suitable to be engaged by a pin-wrench, whereby the latch may be actuated.

Formed in the upper part of the straight lower end portion 18 of said carrier or supporting member, as a unitary part thereof, is a transversely disposed U-shaped bearing portion 22, which projects rearwardly from the rear face of said member, and so as to be open at the front face thereof. This bearing portion 22 provides a bearing support for a cross-arm 23 which is turnably supported in the bight thereof, so that the respective end portions of said cross-arm 23 project transversely in opposite directions from the vertical axis of said carrier or supporting member. To retain the cross-arm 23 thus operatively assembled with the bearing portion 22, the latter is provided with a keeper tongue or lug 24, which is struck out of the lower wall of the bearing portion, and then upturned across the opening side of the latter to retain the cross-arm against outward displacement therefrom. Suitably secured to the central portion of said cross-arm, to extend downwardly therefrom and through the slot or opening 25 in the lower wall of the bearing portion 22, left by the out bent keeper tongue or lug 24, is a depending pendulum lever 26, at the lower end of which is secured a pendulum weight 26′ of suitable form.

Carried upon the respective oppositely extending end portions of said cross-arm 23 are the eye elements of the structure. Each such eye element comprises, in preferred form, a hollow spherical sector forming an eye-lid member 27, having at its inner side a perforation 28. Integral with the opposite or outer side of said eye-lid member is an inturned horizontal arm 29, at the extremity of which is formed an up-turned

perforate bearing ear 30, whereby the latter is inwardly off set relative to the outer side wall of the eye lid member and aligned with the bearing perforation 28 of the inner side wall of the latter. By this arrangement the eye-lid member may be mounted upon an end-portion of the cross-arm 23, by passing the latter through said perforation 28 and bearing ear 30, the imperforate outer side wall of the eye-lid member serving as a stop or abutment engageable by the extremity of the cross-arm, whereby inward displacement of the eye-lid member upon the cross-arm, and relative to operative registered relation to an eye socket of the doll-head with which it is to cooperate, is prevented. Integral with the inner side wall of said eye-lid member, to extend downwardly therefrom and in the vertical plane thereof, is a lever arm 31, having at its lower extremity at angular slotted arm 32 to extend toward, and to embrace the pendulum lever 26, whereby the eye-lid member is operatively coupled with said pendulum means. The free ends of the parallel portions of said slotted arm 32 are provided with inwardly projecting closure lugs 33 having chamferred outer margins in the plane of the slotted arm and which, when sprung over the pendulum lever 26, close the open end of the slot, and thus by abutment upon the pendulum lever 26 prevent outward displacement of the eye-lid member upon the cross-arm and relative to operative registered relation to an eye socket of the doll-head, as well as disengagement of the lever arm 31 from operative assembled relation to said pendulum lever 26. In the preferred arrangement, the eye-ball member 34 is a separate member adjustably secured to the eye-lid member 27, and comprises a hollow semi-spherical shell suitably constructed to simulate at its outer face the appearance of a human eye. The eye-ball member 34 is assembled with and adjustably secured to the eye-lid member 27 by seating the upper portion of the former within the latter. The front margins of the lower ends of the eye-lid member sides are provided with inturned supporting lugs 35 upon which the periphery of the inserted eye-ball member rests. The upper rearward margin of said eye-lid member 27 is provided with a plurality of retaining lugs 36, which are bent around the upper margin of the eye-ball member so as to grip the same, and thus retain it in operative assembled relation to the eye-lid element. The character of the retaining lugs 36 is such that rotative shifting of the eye-ball member relative to the eye-lid member is possible, so that the former may be adjusted to symmetrically position the iris and pupil of the respective eyes properly mutually aligned and centered positions. The frictional grip of the retaining lugs 36 is sufficient, in conjunction with the support of the supporting lugs 35, to hold the eye-ball member both in desired adjusted position and mechanically attached to the eye-lid member so as to move therewith upon actuation of the latter. If desired, eye-lash fringe 37 may be cemented or otherwise secured to the inner surface of the lower front marginal portions of the eye-lid member, so as to project downwardly and outwardly therefrom and over the eye-ball member, as shown.

While I have described, as a preferred form, the assembled initially separate eye-lid and eye-ball members, it will nevertheless be understood, with respect to certain broader aspects of this invention as defined in the subsequent claims, that the eye-lid and eye-ball structure may comprise a single member rather than the two piece structure, in which case the lid element and eye-ball will consist of a single shell the outer surface of which may be suitably treated to simulate the appearance of an eye-lid and eye-ball.

As mounted in the bearing portion 22, the cross-arm 23 is capable of some play toward and from the front wall of the doll-head when the eye structure is operatively mounted within the latter, whereby is permitted more or less independent rearward yielding of the eye-elements; a supplementary spring means is secured to the carrier or supporting member to exert a mild tensional forward thrust upon the cross-arm, to thus yieldably hold the eye-elements operatively related to the eye-socket openings of the doll-head with which they are respectively associated. This supplementary spring means comprises a substantially V-shaped spring member, the closed lower end portion of which is anchored to the carrier or supporting member by retention lugs 38, and the free ends of the arms 39 of which straddle the carrier or supporting plate and bear tensionally upon the rearward side of said cross-arm 23.

Many doll-heads are provided with a mouth opening as 40 (see Fig. 1), in which case a tongue and tooth device is usually secured within the doll-head so as to be visible through the mouth opening. This invention also includes a novel tongue and mouth set, together with means for adjustably supporting the same upon the carrier or supporting member of the detachable movable eye-structure, so that upon insertion of the latter into the doll-head in operative relation thereto, the tongue and tooth device is at one and the same time operatively positioned and supported relative to the mouth opening. The novel tongue and mouth set, according to the present invention, comprises a tongue-plate body 41 having at its exterior side a depressed transverse groove 42. Integral with and extending downwardly from the lower margin of said body 41 is a bracket arm 43 inwardly inclined toward the carrier or supporting member, and terminating in a slide-portion 44, held by lugs 45 turned around the sides and across the back of said carrier or supporting member, in vertically sliding adjustable relation to the latter. Integral with and extending upwardly from the upper margin of said body 41 is a tensioning or spring arm 46, which is inwardly inclined toward the face of the carrier or supporting plate so as to bear tensionally upon the latter. Formed in the face of said body 41, to extend respectively vertically upwardly and downwardly from the transverse groove 42, are depressed seats 47, in which are respectively seated tooth-plates 48 having at their free ends, which overhang said transverse groove 42, embossed tooth representations. Said tooth-plates 48 may be made of any suitable sheet material, such as metal, pyroxylin, etc., and the same are preferably secured in operative assembled relation to the body 41 by rivets 49, or other suitable fastening means. It will be obvious that the tongue and mouth set may be easily slidingly vertically adjusted upon the carrier or supporting plate to dispose the same for proper registration with a mouth opening 40 of a doll-head, when the eye structure is mounted within the latter, and that the tension of the spring arm 46 will tensionally press the body 41 into operative relation to said mouth opening so that the same is frictionally held against accidental displacement therefrom.

To assemble the structure within and in opera-

tive relation to a doll-head, the turn-button latch 20 is initially turned with its long axis aligned longitudinally to the carrier or supporting plate. The structure is then inserted within the doll-head, so that the upper extremity of the springy upper end portion 19 of said carrier or supporting plate is engaged in the notch 17 of the boss 16. The lower extremity of the straight portion 18 of the carrier or supporting member is thereupon thrust forwardly into the seat 14 of the boss 13, whereupon the turn-button latch 20 is rotated to carry its ends respectively into the latch slots 15, thus interlocking the structure in operative position within the doll-head, with the eye elements operatively related to the eye socket openings and the tongue and tooth plate operatively related to the mouth opening of the doll-head, all as shown in Figs. 1, 2 and 3 of the drawing more particularly.

When the movable eye structure, etc., is thus affixed within the doll-head, the operation of the eye elements will be controlled by the weighted pendulum lever in the general manner familiar to those skilled in the art, rotative eye closing and opening movements being transmitted to the eye elements through the slotted extensions 32 of the lever arms 31 by swinging movement of the weighted pendulum lever. The eye element closing movement of the pendulum lever is limited by abutment of the latter against the end of the slot 25 from which the keeper tongue or lug 24 of the bearing portion 22 is struck.

As many changes could be made in the above-described constructions, and many apparently widely different embodiments of the invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawing, shall be interpreted as illustrative and not in a limiting sense.

I claim:—

1. A movable eye structure for detachable mounting in a doll-head, comprising a substantially vertical resilient supporting member in the form of a metal strip having a transverse bearing portion formed therein intermediate its ends, means for interlocking said supporting member to and within a doll-head under forwardly bowed tension, a cross-arm supported by said bearing portion, a weighted pendulum lever depending from said cross-arm, and eye elements supported on the end portions of said cross-arm, each eye element having a depending actuating lever terminating in an angular slotted extension embracing said pendulum lever.

2. A movable eye structure for detachable mounting in a doll-head, comprising a substantially vertical resilient supporting member in the form of a metal strip having a transverse forwardly open U-shaped bearing portion integral with said supporting member, means for interlocking said supporting member to and within a doll-head under forwardly bowed tension, a cross-arm supported by said bearing portion, a keeper lug struck out of said supporting member to close over the open side of said bearing portion to retain said cross-arm against displacement from the latter, a weighted pendulum lever depending from said cross-arm, and eye elements supported on the end portions of said cross-arm each eye element having a depending actuating lever terminating in an angular bifurcated extension to embrace said pendulum lever, the ends of the arms of said extension having opposed lugs to close the pendulum lever receiving space thereof against displacement of said pendulum lever therefrom.

3. An eye and mouth fixture for doll-heads, comprising a substantially vertical supporting member having a resilient upper portion, means for interlocking said supporting member to and within a doll-head, pendulum actuated eye elements supported by said supporting member, and a tongue and tooth plate having means to slidably connect the same with said supporting member for vertical adjustment thereon, said tongue and tooth plate also having a resilient arm to bear upon said supporting member to tensionally position said plate in operative relation to the mouth opening of a doll-head when said supporting member is affixed within the same.

4. A movable eye fixture for doll-heads, comprising a substantially vertical resilient supporting member having in the form of a metal strip, means for interlocking said supporting member to and within a doll-head under forwardly bowed tension, a cross-arm supported by said supporting member, a weighted pendulum lever depending from said cross-arm, and hollow eye elements respectively carried on the end portions of said cross-arm, each eye element having at its inner side a perforation to receive a cross-arm end portion and at its outer side an integral perforate lug inwardly off-set therefrom also adapted to receive said cross-arm end portion whereby the eye element may be adjustably located upon the latter, and each eye element having at its inner side a depending actuating lever terminating in an angular slotted extension to embrace said pendulum lever.

5. An eye and mouth fixture for a doll-head comprising a support detachably mounted within the head, an eye-movement carried by said support, a tongue and tooth plate having a rearwardly depressed transverse groove, tooth elements affixed to said plate with portions thereof overhanging said groove, and means for adjustably and resiliently mounting said plate on said support.

6. An eye and mouth fixture for a doll-head comprising a support detachably mounted within the head, an eye-movement carried by said support, a tongue and tooth plate having a rearwardly depressed transverse groove, vertically disposed depressed seating means adjacent to said transverse groove, tooth elements having their main portions engaged and secured in said seating means with their free ends overhanging said groove, and means for adjustably and resiliently mounting said plate on said support.

7. In a movable eye-fixture for doll-heads, a cross-arm and a swinging pendulum lever, eye-lid members comprising hollow spherical sectors having means to pivotally engage the same respectively on the opposite end portions of said cross-arm, each eye-lid member having a depending actuating lever terminating in a bifurcated angular extension to embrace said pendulum lever, the ends of said extensions having opposed lugs to close the pendulum lever receiving space thereof, an eye-ball member for each eye-lid member, and means to adjustably affix each eye-ball member to its eye-lid member.

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