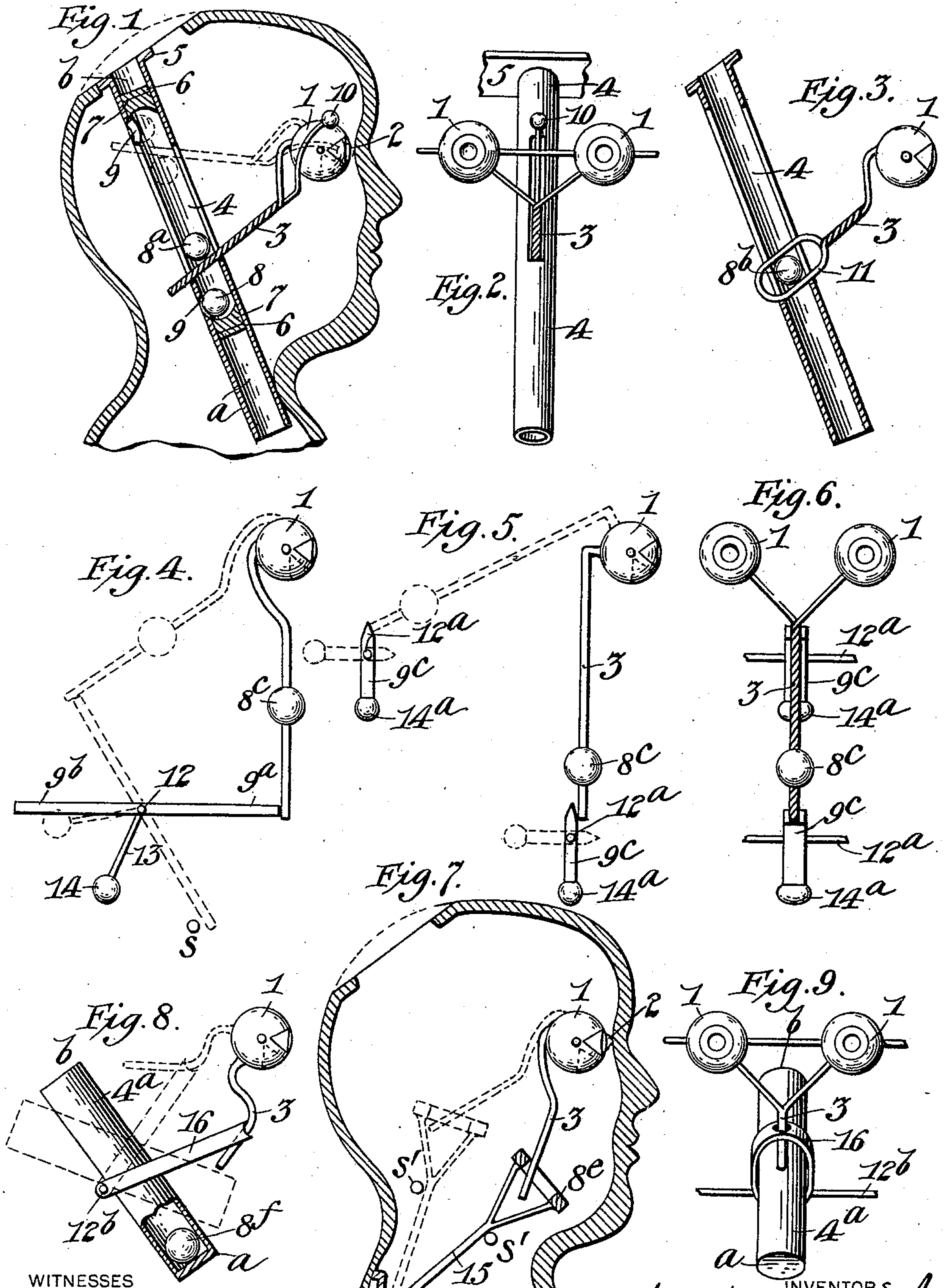
(No Model.)

E. A. HINRICHS & F. P. BEMIS.

DOLL.

No. 564,563. Patented July 21, 1896.



WITNESSES

Peter Hoog

J. H. Truett

INVENTORS

Edward A. Hinrichs

Frederick P. Bemis

by their Attorney

Vernon M. Dorsey.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

EDWARD AUGUST HINRICHS AND FREDERICK POMEROY BEMIS, OF DAVENPORT, IOWA.

DOLL.

SPECIFICATION forming part of Letters Patent No. 564,563, dated July 21, 1896.

Application filed April 4, 1896. Serial No. 586,207. (No model.)

To all whom it may concern:

Be it known that we, EDWARD AUGUST HINRICHS and FREDERICK POMEROY BEMIS, citizens of the United States, residing at Davenport, in the county of Scott and State of Iowa, have invented certain new and useful Improvements in Dolls; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates to certain improvements in the mechanism for actuating the eyes of dolls, and it further relates to means whereby they will be kept open or shut until the doll is inclined to a predetermined extent and then suddenly closed or opened, as the case may be, thus obviating the unnatural and unpleasant effect produced when a doll having eyes constructed in the ordinary manner is inclined, whereby the eyes are only gradually closed or opened, and if not inclined sufficiently to entirely close or open the eyes leaves them partly open, and in several of the forms of the invention hereinafter described for effecting this result the weight is supported independently thereof, thus relieving the pivots of the eyes of the strain which would otherwise be thrown thereon, and by which the pivots of the eyes have heretofore been loosened.

Referring to the accompanying drawings, in which corresponding parts are designated by similar marks of reference, Figure 1 is a view partly in section of a doll-head having this invention applied thereto. Fig. 2 is a front elevation of eyes and eye-operating mechanism shown therein, the parts shown being removed from the head. Fig. 3 is a view similar to Fig. 1, showing a slightly-modified form thereof, the mechanism being removed from the head. Fig. 4 is a view similar to Fig. 3, but showing the use of a single pivoted detent to release the weight for actuating the eyes. Figs. 5 and 6 are views similar to Figs. 1 and 2, respectively, but showing the use of double detents and the mechanism as removed from the head. Fig. 7 is a view partly in section showing the weight as pivoted and moving in a curved path around its pivotal point. Figs. 8 and 9 are views similar to Figs. 5 and 6, respectively, but showing the use of a tilting track actuated by a weight running therein to move the eyes.

In all the forms of our invention herein shown the eyeballs 1 are pivotally mounted behind their sockets 2 in the head and have connected therewith the lever 3, preferably consisting of two twisted wires, one of which goes to each ball and is connected thereto, through which lever the actuation of the eyes is effected, thus permitting the use of a single weight to control both eyes, insuring the simultaneous operation thereof, but the mechanism for effecting this actuation of the eyeballs differs somewhat in the several forms of our invention.

In the device shown in Figs. 1 and 2 a tube 4, slotted on two opposite sides, is secured within the head by the cross-piece 5, (connected with the end *b* of the tube,) inserted in the open top of the head, through which opening the eyeballs and mechanism for operating them are inserted, the opposite end *a* of the tube being secured to the interior of the neck, thus giving the tube when the doll is erect an inclination upwardly and toward the rear, the ends of the tube being closed, as at 6, and having cushions 7 therein to receive the impact from the weights hereinafter referred to. Through the slots in this tube the rear end of the lever 3, secured to the eyeballs, projects, and within the track, formed by the tube, and on each side of the lever is a spherical weight 8 8^a, moving freely therein. Such being the case, it will be seen that when the doll is erect both weights and the lever will be in the lower end *a* of the tube, and the eyeballs will be fully opened, as shown in Fig. 1, and that if the doll be so inclined as to cause the end *b* of the tube to be below the level of the end *a* thereof the weights will run to the end *b*, closing the eyes, as shown in dotted lines. It will be seen, as the tube is straight, that when the weights have started to move therein, owing to an inclination of the doll, they will run to the opposite end thereof, thus fully actuating the eyes without necessitating any further inclination, and in this my invention differs from a device in which the weights are swung below their pivotal point, such as when the weights are hung

upon the eyes, for in such a device these weights merely move sufficiently below the pivotal point, but to insure the sudden closing of the eyes, hereinbefore referred to, a detent 9, formed by a depression in the bottom of the tube, may be placed near the end *a* thereof, which detent will engage the lower weight 8 and prevent the movement thereof, except upon a considerable inclination of the doll, when, upon the escape of the weight from the detent, it will run to the opposite end *b* of the tube, carrying the parts to the position shown in dotted lines in Fig. 1. A sudden opening of the eyes may be caused by a similar detent near the opposite end *b* of the tube to engage the weight 8^a and to release it in a similar manner when the doll has become sufficiently erect. As the weight 8^a is free to move from the end *a* of the tube upon a slight inclination thereof, the forward and upper end of the lever 3 may receive a supplemental weight 10, located above the eyeballs and preferably on an extension of the forward end of the lever above the eyes, so that the said weight 10 will hold the rear end of the lever at the end *a* of the tube, unless it be moved by the superior force of the main weight 8. Such a supplemental weight will, moreover, prevent the eyes from opening upon the initial movement of the weight 8 from the end *b* of the tube and before the weight 8^a has escaped the detent 9.

In Fig. 3 a form of the invention is shown similar to Figs. 1 and 2; but in this figure a single weight 8^b is contained within the loop 11 upon the rear end of the lever 3, and in this construction the cushions 7 may be dispensed with and the detents used or not, as desired. It will be seen that this single weight will, by its position in the tube 3, determine the position of the eyeballs.

In Fig. 4 a form of the invention is shown in which a pivoted detent is used instead of the fixed detents of the previous forms. The lever 3 has directly mounted thereon the main weight 8^c, which, swinging under the influence of gravity, causes the movement of the eyeballs, but this movement is controlled by the detent 9^a, pivoted at or near its middle on the transverse pintle 12. An arm 13, having the supplemental weight 14 on its end, projects rearwardly from the detent and causes the lower end of the latter, upon the inclination of the doll, to pass out of engagement with the upper face of the lever 3, thus permitting the lever to be swung by its weight 8^c to the position shown in dotted lines and closing the eyes, the end of the lever in this movement sliding on the forward face of the detent and depressing the upper end 9^b thereof sufficiently to cause the engagement thereof by the forward face of the lever holding the eyes closed. Upon turning the doll to an erect position again, the detent swings in the opposite direction, its upper end releasing the lever and its lower end again engaging it. It is obvious that by varying the position of the weight 14 in respect to the pivotal point of the detent the inclination necessary to give the doll to cause its eyes to close and open may be varied, and a stop *s* may be provided to limit the movement of the detent.

In Figs. 5 and 6 a different form of pivoted detent is shown, and in this figure the rear end of the lever 3 is adapted to be engaged by the upper end of the detent 9^c, pivoted on the transverse pintle-pin 12^a, and held by the weight 14^a in engagement with the lever. It is obvious that upon the inclination of the doll the upper end of the detent will release the lever and the latter swing over. In this figure two of these detents are shown, one for holding the eye open and the other closed, (the two positions being shown in full and dotted lines, respectively,) and that both or either of such detents may be used, as may be desired.

In Fig. 7 the equivalent of the detents hereinbefore described is formed by the weight 8^e, shown in the form of a disk, through the center of which the end of the lever 3 passes, the weight being upon the free end of an arm 15, pivoted at 15^a at the back of the neck. In this form of the invention the eyes will remain open until the inclination of the doll causes the weight to pass over the point 15^a, when it will immediately fall to the position shown in dotted lines, closing the eyes, which will be opened by the reverse operation of the parts. Suitable stops *s' s'* may be provided to limit the movement of the arm 15.

In Figs. 8 and 9 a track, in the form of a tube 4^a, with closed ends is pivoted within the head upon the transverse pintle-pin 12^b, the tube having an arm projecting forwardly therefrom, the said arm 16 having an aperture in its forward end, through which the rear end of the lever 3 projects. A spherical weight 8^b is contained within the tube, but is free to move therein. The normal position of the tube is the same as that in the form of the invention shown in Fig. 1, with the eyes open, but when the doll is inclined sufficiently to cause the weight 8^f to roll within the tube to what was its upper end *b*, the preponderance of weight thus located at that end will tilt the tube upon its pivot and cause the eyes, through the connection between the arm 16 and the lever, to close. The reverse will be the case when the doll is raised, and in this form of our invention it will be seen that the opening and closing are not merely caused by the position of the ball or weight within the tube, but by the position of the tube itself, and that therefore the opening and closing will be sudden, for any tendency of the tube to stick will be overcome by the shock occasioned by the impact of the weight with the end thereof.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a doll, the combination with pivoted eyeballs, of a weight for the actuation there-

of, and means controlled by the inclination of the doll for suddenly releasing the said weight, substantially as described.

2. In a doll, the combination with pivoted eyeballs, of a weight for the actuation thereof, and a detent for suddenly releasing the said weight, substantially as described.

3. In a doll, the combination with pivoted eyeballs, of a weight for the actuation thereof, and means actuated by the position of the doll for holding the said weight until the doll is sufficiently inclined to carry the weight to the opposite end of its path, substantially as described.

4. In a doll, the combination, with pivoted eyeballs, of a track, and a weight movable on the said track to actuate the eyes, the position of the weight upon the track being controlled by the inclination of the doll, substantially as described.

5. In a doll, the combination, with pivoted eyeballs, of a track, weights movable on the said track for actuating the eyes, and a detent on the track to hold the weight stationary except upon a considerable inclination of the doll, substantially as described.

6. In a doll, the combination, with the pivoted eyeballs, of a slotted tube, a lever projecting from the eyeballs through the slot in the said tube, and a weight contained and movable in the tube, substantially as described.

7. In a doll, the combination, with the pivoted eyeballs, of a slotted tube, a lever projecting from the eyeballs through the slot in the tube, a weight movable in the tube, and a detent for controlling the movement of the said weight, substantially as described.

8. In a doll, the combination, with the pivoted eyeballs, of a slotted tube, a lever projecting from the eyeballs through the slot in the tube, a weight in the tube on each side of the lever, and detents for controlling the movements of the said weights, substantially as described.

9. In a doll, the combination with the pivoted eyeballs, of a slotted tube, a lever projecting from the eyeballs, through the slot in the tube, a weight in tube on each side of the lever, detents for controlling the movements of the said weights, and a supplemental weight mounted on the lever above the eyeballs, substantially as described.

10. In a doll, the combination with the pivoted eyeballs, of a track, means mounted thereon for controlling the movement of the eyeballs, and a supplemental weight attached to the eyeballs and located above their pivotal points and tending to hold the eyes either open or shut according to the inclination of the doll, substantially as described.

11. In a doll, the combination with pivoted eyeballs, of means for opening the said eyeballs, means for closing the eyeballs, and a supplemental weight attached to the eyeballs and located above their pivotal points and tending to hold the eyes either open or shut according to the inclination of the doll, substantially as described.

12. In a doll, the combination, with pivoted eyeballs, of means for suddenly opening the eyes, means for suddenly closing the eyes, and a supplemental weight attached to the eyeballs and located above their pivotal points and tending to hold the eyes either open or shut according to the inclination of the doll, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

EDWARD AUGUST HINRICHS.
FREDERICK POMEROY BEMIS.

Witnesses:
C. H. KENT,
M. D. SNYDER.