Nov. 10, 1942. S. MARCUS 2,301,431

EYE FOR DOLLS

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Fig. 1

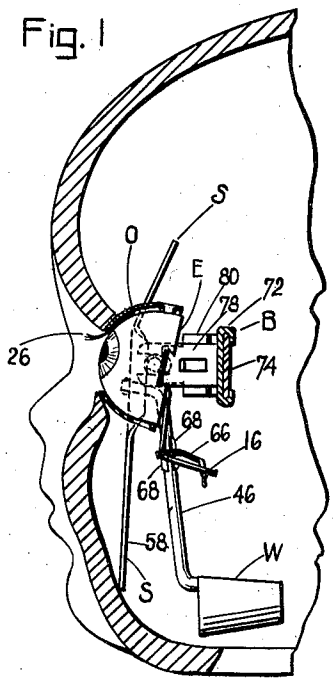


Fig. 2

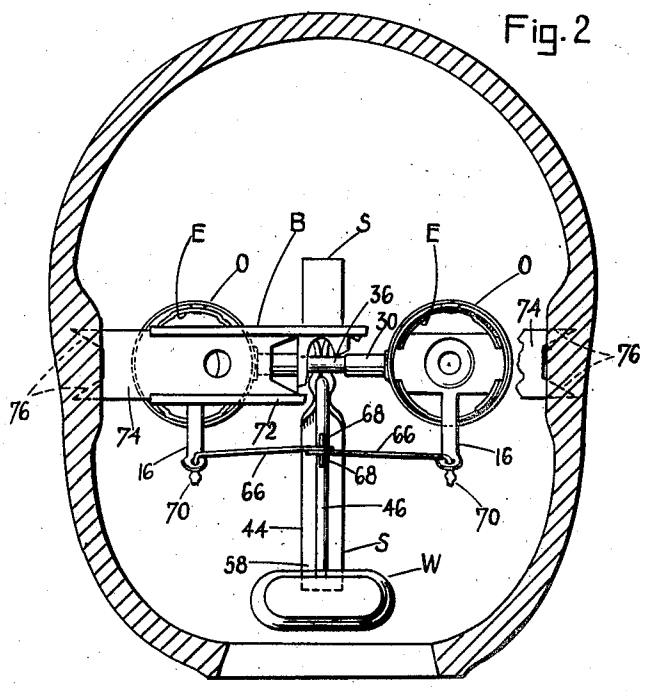


Fig. 3

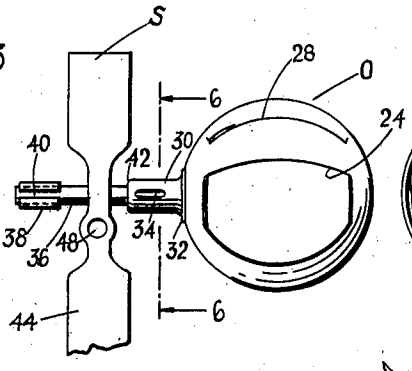
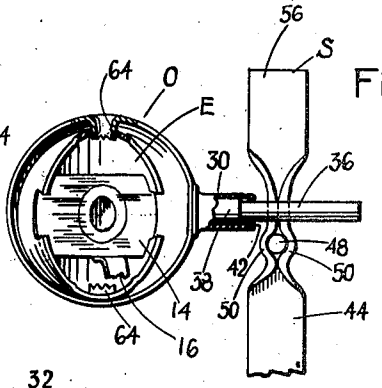


Fig. 4



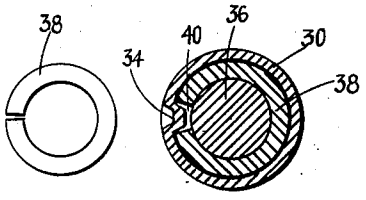


Fig. 5 Fig. 6

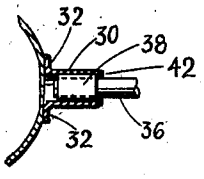


Fig. 7

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Nov. 10, 1942. S. MARCUS 2,301,431

EYE FOR DOLLS

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Fig.

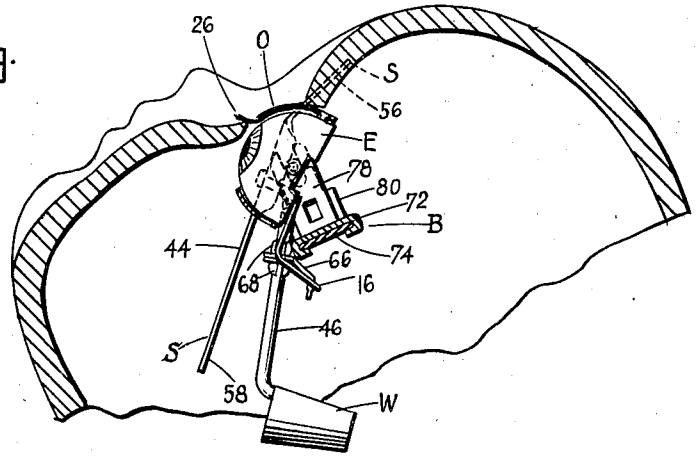


Fig. 9

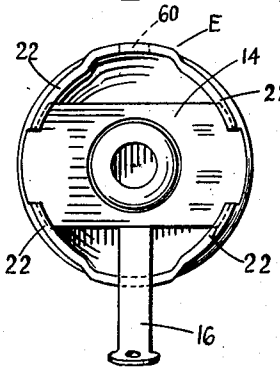


Fig. 10

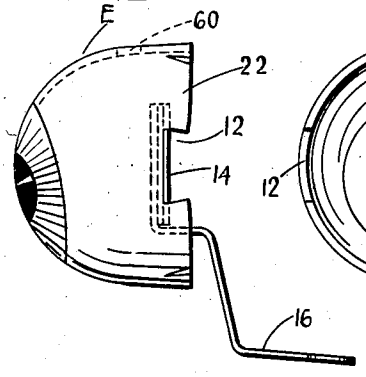


Fig. 11

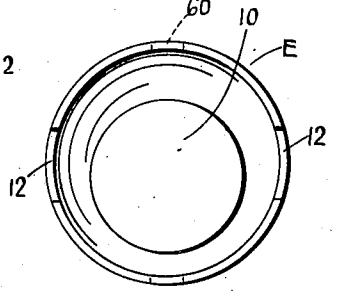
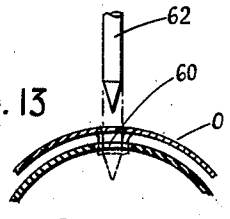


Fig. 13



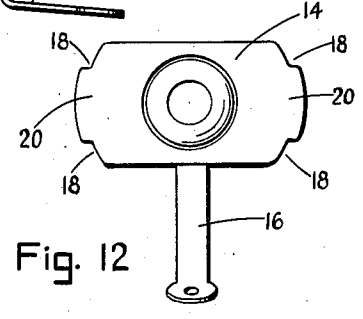
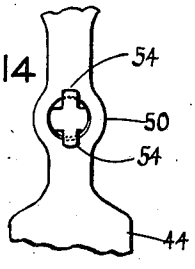


Fig. 12

Fig. 14



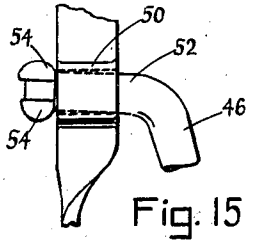


Fig. 15

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Patented Nov. 10, 1942 2,301,431

UNITED STATES PATENT OFFICE

2,301,431

EYE FOR DOLLS

Samuel Marcus, Jersey City, N. J., assignor to Margon Corporation, Bayonne, N. J., a corporation of New Jersey

Application June 8, 1940, Serial No. 339,461

15 Claims. (Cl. 46—168)

This invention relates to doll eyes, and more particularly to rolling eyes.

The primary object of my invention is to generally improve doll eyes. Some features of the invention are applicable to ordinary sleeping eyes, but for the most part, the invention is concerned with so-called rolling eyes, that is, eyes which can roll from side to side as well as close for simulated sleep.

It has already been proposed to use a single weight for causing both the rolling and sleeping movements of the eyes. Such an arrangement is shown in my Patent No. 2,149,685. That arrangement, while successful, and representative of the best prior construction known to me, has raised some difficulty in that the eyes do not fully close for sleep simulation unless the doll is reclined to full horizontal position. One primary object of the present invention is to overcome this difficulty, and to provide a single weight arrangement which will cause full closing of rolling doll eyes when the doll is reclined only partially.

In my aforesaid patent, the eyes are mounted within protective outer shells which are slidably carried on a stub shaft for automatic self-adjustment of the center-to-center spacing between the eyes. At the same time, provision is made for manual rotative adjustment of one outer shell relative to the other. The arrangement necessitates a square stub shaft and a square bushing, and some difficulty has arisen with loss of friction in the event of considerable rotative adjustment. The frictional relation between the bushing and the collar on the outer shell is rather critical. It is also a little inconvenient to upset the ends of the stub shaft to prevent accidental separation of the parts of the eye set prior to mounting of the same in a doll head. Further objects of the present invention are to overcome the foregoing difficulties, and this is done by using a split spring steel bushing on a round stub shaft, the collar of the outer shell being indented to form a key which fits between the ends of the bushing. The inner end of the collar may be spun to prevent separation of the outer shell from the stub shaft. With this arrangement, a smooth frictional grip of the outer shell relative to the shaft is obtained, and the desired amount of friction is maintained indefinitely.

A further object of the invention is to simplify the construction and lessen the cost of the parts of the eye set. More specifically, one object is to simplify the back plate for the eye member, and the method of attaching the same to the eye. Another object is to eliminate the use of a vertical shaft for side-to-side or rolling movement of the eye. Still another object is to provide thin wire links between the weight arm and the eye arms, while at the same time so arranging the linkage as to provide a large range of rolling movement for the eyes.

To the accomplishment of the foregoing and other objects which will hereinafter appear, my invention consists in the doll eye elements and their relation one to the other, as hereinafter are more particularly described in the specification and sought to be defined in the claims. The specification is accompanied by drawings in which:

Fig. 1 is a section taken in elevation through a doll head at one of the eyes;

Fig. 2 is a transverse section through the head in back of the eye set;

Fig. 3 is a front elevation of a part of the eye set;

Fig. 4 is a rear elevation of a part of the eye set;

Fig. 5 is an end elevation of a spring steel bushing drawn to enlarged scale;

Fig. 6 is a section taken in the plane of the line 6—6 of Fig. 3, drawn to enlarged scale;

Fig. 7 is explanatory of a detail of the construction;

Fig. 8 is a section similar to Fig. 1, but showing the eye set in sleeping position when the doll is reclined;

Fig. 9 is a rear elevation of an eye member with the back plate in position;

Fig. 10 is a side elevation of the same;

Fig. 11 is a rear elevation of the eye member prior to addition of the back plate;

Fig. 12 is a rear elevation of the back plate;

Fig. 13 is explanatory of the method of making the vertical pivots for the eye member; and

Figs. 14 and 15 are front and side elevations, respectively, of the weight arm bearing.

Referring to the drawings, especially to Figs. 1, 2 and 8, the particular form of my invention here illustrated comprises eyes E pivoted for free and preferably universal oscillation under the influence of a weight W. The eyes are preferably supported for vertical or sleeping oscillation within the head by a suitable fitting or mounting here exemplified by expansible transverse bridge B, and such oscillation is preferably limited by adjustable top and bottom stops S. The eyes are protectively housed within outer shells O which function as lash-bearing eyelids, and which pro-

vide bearings for sideward or horizontal oscillation of the eyes E.

Considering the arrangement in greater detail, the eyes E are generally hemispherical in configuration. They are preferably made of metal drawn to desired shape. Cheap eyes may have the pupil and iris simply lithographed thereon, the remainder of the eye shell being white. More expensive eyes preferably employ a transparent lens or iris portion which is set into an opening in the front of the eye shell. The back of such a lens arrangement is indicated at 10 in Fig. 11 of the drawings.

In accordance with the present invention, the rear edge of the eye is provided with a pair of recesses 12 disposed at horizontally diametrically opposed points, as is best shown in Figs. 10 and 11. In Fig. 10 these recesses are undercut or dovetail in shape, but they are initially cut rectangular in shape, as is shown in Fig. 11. The eye is completed by means of a back plate 14 which is preferably formed integrally with a downwardly and rearwardly extending eye arm 16. These parts are preferably struck from a single piece of thin sheet metal, and the configuration of back plate 14 will be clear from inspection of Fig. 12. The back plate is preferably substantially wider than the recesses 12, and is notched or shouldered at 18 to provide tenons 20 dimensioned to be received in recesses 12. The longitudinal distance between shoulders 18 is preferably made equal to the space between the side walls of the eye member, so that these shoulders prevent longitudinal or side-to-side movement of the back plate. After the plate 14 has been inserted in recesses 12, the edge of the eye is preferably squeezed or indented inwardly somewhat as is shown at 22 in Figs. 9 and 10. This closes the recesses 12 enough to securely lock the back plate in position, the recess being changed from its initial rectangular shape to the undercut or dove-tail shape shown in Fig. 10.

The outer shell O is a generally hemi-spherical shell preferably made of sheet metal. It is cut away at the front, as is indicated at 24 in Fig. 3, to expose the eye therein, the opening in the outer shell being made at least as large as and preferably somewhat larger than the eye opening in the doll head. The upper part of the outer shell is preferably flesh-colored and acts as an eyelid simulation when the eyes are closed. The outer shell also carries a suitable eye-lash 26 (Figs. 1 and 8), the rear portion of the eye-lash being secured in a slit 28 (Fig. 3), much as is described in my aforesaid Patent No. 2,149,685. The outer shell is provided with a sidewardly projecting sleeve or collar 30 (Figs. 3, 4 and 7), the end of which may be flanged outwardly as shown at 32, and secured to the outer shell, as by means of spot welding. Here again, the construction may be similar to that in my patent aforesaid, but in the present case, the collar is longitudinally indented at 34, as is best shown in Figs. 3 and 6, to form a key, the purpose of which is later described.

The outer shells are carried at the ends of a stub shaft 36. This is a short, stiff piece of simple round wire stock. Split cylindrical bushings 38 are employed between shaft 36 and collars 30. The bushings 38 are preferably made of thin tempered spring steel. As initially constructed, the split is substantially closed, as is clearly shown in Fig. 5, but at this time the internal diameter of the bushing is somewhat less than the external diameter of the shaft 36. When the bushings are forced over the ends of the shaft, they grip the same with a tight dependable frictional grip. At the same time, the split in the bushing is opened up an appreciable amount, as is clearly shown in Figs. 3 and 6.

The resulting space 40 acts as a keyway to slidably receive the key 34 previously referred to. This insures rotation of the outer shells with the shaft, without, however, interfering with axial movement of the outer shells relative to the bushings 38. This axial movement affords an automatic self-adjustment of the center-to-center spacing between the outer shells so that they will seat themselves accurately in the eye openings of the head. At the same time, the frictional relation between shaft 36 and bushings 38 makes it possible to manually turn one of the outer shells relative to the other in order to rotatively adjust the same to fit the eye openings. The axial movement may be limited to prevent complete escape of the outer shell from the shaft, by simply spinning the inner end of collar 30 inwardly, as is shown at 42 in Figs. 4 and 5. It will be understood that collars 30 are longer than bushings 38 by an amount sufficient to provide the necessary axial adjustment.

The stub shaft 36 is secured, as by spot welding, to a generally upright strip of heavy gauge sheet metal 44. This strip serves three main purposes. The first is to provide a bearing between the arm 46 of weight W, and the shaft 36, so as to transfer movement of the weight to the shaft. For this purpose the strip is folded in the region of shaft 36, and is perforated at the front to form a bearing hole 48 best shown in Figs. 3 and 4. The side walls are curved to conform to hole 48, as will be seen at 50 in Fig. 4, thereby providing a relatively long bearing surface to receive and support the forwardly bent end 52 (Fig. 15) of weight arm 46 against downward movement, despite the gravitational force on the weight. The tip of the weight arm is pinched in a suitable die to excise some of the metal, as is shown at 54, thus holding the weight arm in its bearing.

For this one function alone, the strip 44 might be localized immediately at shaft 36, but instead, the strip is preferably extended both upwardly and downwardly in order to form the motion-limiting stops S previously referred to. The upper end 56 acts as a stop to limit closing movement of the eye, it being shown in use in Fig. 8. The lower end 58 acts to limit opening movement of the eye, it being shown in use in Fig. 1. It will be understood that the strip may be bent to such shape as will properly limit the movement of the eye set in its relation to the shape of the head and the location of the surfaces engaged by the stops.

The eyes E are pivoted within the outer shell O for side-to-side oscillation. This may be done by means of a vertical shaft, but I find that a simple and economical way to provide the necessary pivots, is to simply extrude some of the metal of the outer shell inwardly. Specifically, the eyes are provided with bearing holes 60 (Figs. 9, 10 and 13) at the top and bottom thereof. The eye members are positioned within the outer shells in proper relation, the parts being supported in a suitable die, whereupon sharp points, one of which is schematically indicated at 62 in Fig. 13, are moved through the top and bottom walls of the outer shell at the pivot holes 60 in the eye member. Because of the sharply pointed nature of the pins 62, they do not remove metal and instead simply bend or extrude the metal

inwardly, as is best shown at 64 in Fig. 4. I have found that enough metal may thus be forced inwardly to provide suitable pivots for the eye.

The eye arms 16 are connected to the weight arm 46 for side-to-side or rolling movement with the weight arm. This is preferably done by means of links 66 best shown in Fig. 2. The use of two separate links has an advantage over the use of one cross-bar connection in that it readily accommodates changes in angularity as the parts swing in different planes. Each link preferably consists of a piece of thin light wire, the inner end of which is coiled to form a loop or eye which loosely receives the weight arm 46. The latter is preferably pinched above and below the links, as is indicated at 68, in order to loosely hold the latter in desired position along the weight arm. The outer ends of links 66 are bent downwardly and pass through perforations in eye arms 16. The lower ends or tips of the links are preferably pinched to spread the same, as is indicated at 70 (Fig. 2), thereby holding the links in assembled relation with the eye arms.

The complete eye set is adapted to be supported within the head by known standard forms of mounting. In the present case, I have illustrated the use of an expansible bridge B which comprises a central channeled member 72 within which are frictionally reciprocable end or tang plates 74 which are forced outwardly to embed end prongs or tangs 76 (Fig. 2) into the side walls of the head. The center or channel portion 72 has a pair of forwardly extending arms 78 (Fig. 1), the forward ends of which are bifurcated to receive the cross-rod of the eye set, or more specifically, in the present case the cylindrical outer surfaces of the collars 30. An appropriate leaf spring or other resilient means 80 (Fig. 1) is provided to yieldably urge the outer shells O forwardly into intimate engagement with the eye openings of the doll head, without, however, creating too much friction for free sleeping movement of the outer shells.

The various parts described above may be assembled in various ways, but I prefer to use the following procedure. The back plates 14 are added to the eyes E by warping in the edges of the eyes with a suitable die, and thereby locking the back plates in position. Another sub-assembly of parts is made by adding the weight W to the weight arm 46, and adding the links 66 to the weight arm, the latter being pinched at 68 to loosely hold the links in position. Still another sub-assembly is made by welding the stub shaft 36 to the upright strip S, following which the spring steel sleeves 38 are forced over the ends of shaft 36. The collars 30 are welded to the outer shells O, and the latter are then slid over the spring steel bushings and their ends are spun inwardly to hold the parts in assembled relation. The eyes with the back plates and eye arms thereon, are added to the outer shells in a die which properly supports and spaces the parts while piercing the outer shells to make the necessary pivots for the eyes. The weight arm assembly is added by passing its upper end through the bearing 48, 50 in strip S, and then pinching the end of the weight arm to hold it in assembled relation. The free or outer ends of the links 66 are now passed through the receptive holes in the eye arms, and their tips are pinched to hold them against escape.

It is believed that the construction and operation as well as the many advantages of my improved rolling eye set for dolls, will be apparent from the foregoing detailed description thereof. The eye set assumes its fully closed or sleeping position when the doll is reclined, without necessitating that it be laid in fully horizontal position. The spring steel bushings provide a smooth frictional grip which is strong and which remains constant. The arrangement is cheaper to make, and easier to handle than a construction using a square shaft with square bushings and requiring upset ends for the shaft. The linkage is light and cheap, and affords a large range of movement. The vertical bearings or pivots for the eyes are made with a minimum of expense, and there is no need for a special vertical shaft, nor for a complicated back plate associated with such a shaft. The new back plate disclosed herein is simple and inexpensive to make, and may be assembled on the eye with a minimum of operations, time and labor. The eye arm is formed integrally with the back plate, and is thus readily attached to the eye. All desired manual and automatic adjustments of the eye set are retained, and it is adapted to be supported in the head by standard mountings heretofore available.

It will be apparent that while I have shown and described my invention in a preferred form, many changes and modifications may be made in the structure disclosed, without departing from the spirit of the invention as sought to be defined in the following claims.

I claim:

1. A rolling eye assembly for a doll, said eye assembly comprising a generally hemispherical outer shell, means mounting the same for oscillation about a horizontal axis, an eye disposed within the outer shell, the forward portion of the outer shell being cut away to expose the eye, said eye having bearing holes at the top and bottom thereof, said outer shell being pierced inwardly at the top and bottom thereof in such a manner that metal of the outer shell is excised or extruded into the bearing holes and acts to pivot the eye for side-to-side or rolling movement of the eye, the rear edge of said eye being recessed at horizontally opposed points, a back plate having its ends received in said recesses, the edge of the eye being compressed inwardly somewhat at the plate in order to somewhat close the recesses, thereby locking the plate on the eye, there being no inward displacement of the eye at the top and bottom, in order not to increase the spacing between the outer shell and the eye at the aforesaid excised bearings.

2. A rolling eye assembly for a doll, said eye assembly comprising a generally hemispherical outer shell, means mounting the same for oscillation about a horizontal axis, a generally hemispherical eye disposed within the outer shell, the forward portion of the outer shell being cut away to expose the eye, said eye having bearing holes at the top and bottom thereof, said outer shell being pierced inwardly at the top and bottom in such a manner that metal of the outer shell is excised or extruded into the bearing holes and acts to pivot the eye for side-to-side or rolling movement of the eye, the rear edge of said eye being recessed at horizontally diametrically opposed points, a combination back plate and eye arm formed out of a single piece of sheet metal, said plate being notched or shouldered at its ends leaving tenons dimensioned to be received in said recesses, said shoulders preventing longitudinal movement of the back plate relative to the eye, the peripheral edge of the eye

being compressed inwardly somewhat at opposite sides of the tenons in order to close the recesses to a somewhat undercut shape, thereby locking the back plate on the eye shell.

3. A rolling eye set for a doll, said eye set comprising outer shells having elongated cylindrical collars projecting horizontally toward one another, eyes mounted within said outer shells for oscillation on upright axes, a round stub shaft extending between said outer shells for oscillation about a horizontal axis, a split spring steel bushing on each end of the stub shaft, with an appreciable space at the split between the ends of the bushing, said collars being received over said bushings, said bushing fitting one of the parts frictionally, and the other part having a key received in the space between the ends of the bushing to prevent relative rotation of the outer shells and the stub shaft.

4. A rolling eye set for a doll, said eye set comprising outer shells having elongated cylindrical collars projecting horizontally toward one another, eyes mounted within said outer shells for oscillation on upright axes, a round stub shaft extending between said outer shells for oscillation about a horizontal axis, split spring steel bushings frictionally applied to the ends of the stub shaft, the diameter of the shaft being such that it opens the bushing enough to provide an appreciable space at the split between the ends of the bushing, said collars being received over said bushings and having keys indented therein, said keys being received in the space between the ends of the bushings to prevent relative rotation of the outer shells and the stub shaft, the frictional grip of said spring bushings on the stub shaft affording manual rotative adjustment of one eye relative to the other.

5. A rolling eye set for a doll, said eye set comprising outer shells having elongated cylindrical collars projecting horizontally toward one another, eyes mounted within said outer shells for oscillation on upright axes, a round stub shaft extending between said outer shells for oscillation about a horizontal axis, split spring steel bushings frictionally applied to the ends of the stub shaft, the diameter of the shaft being such that it opens the bushing enough to provide an appreciable space at the split between the ends of the bushing, said collars being freely slidably received over said bushings and having keys indented therein, said keys being received in the space between the ends of the bushings to prevent relative rotation of the outer shells and the stub shaft, the frictional grip of said spring bushings on the stub shaft affording manual rotative adjustment of one eye relative to the other, while the slidable fit of the collars on the bushings affords a free axial self-adjustment of the eyes.

6. A rolling eye set for a doll, said eye set comprising outer shells having elongated cylindrical collars projecting horizontally toward one another, eyes mounted within said outer shells for oscillation on upright axes, a round stub shaft extending between said outer shells for oscillation about a horizontal axis, split spring steel bushings frictionally applied to the ends of the stub shaft, the diameter of the shaft being such that it opens the bushing enough to provide an appreciable space between the ends of the bushing, said collars being slidably received over said bushings and having keys indented therein, said keys being received in the space between the ends of the bushings to prevent relative rotation of the outer shells and the stub shaft, the frictional grip of said spring bushings on the stub shaft affording manual rotative adjustment of one eye relative to the other, the free ends of said collars being spun inwardly to prevent removal of the outer shells from the spring bushings and stub shaft, the length of the collars exceeding the length of the bushings in order to afford a free axial self-adjustment of the eyes.

7. A rolling eye set for a doll, said eye set comprising a generally upright strip of metal an intermediate part of which is secured to a horizontal stub shaft and an adjacent part of which is folded and shaped to provide an elongated bearing for a weight arm, said bearing being approximately perpendicular to both the stub shaft and the strip, eye assemblies mounted on said stub shaft, each eye assembly including an outer shell rotatable with the stub shaft about a horizontal axis, and an eye housed within the outer shell and oscillatable from side to side about an upright axis, eye arms extending downwardly and rearwardly from said eyes, a wire weight arm extending downwardly in the general direction of the strip from the aforesaid bearing and carrying a weight at its lower end, and links extending from the weight arm to the eye arms.

8. A rolling eye set for a doll, said eye set comprising a generally upright strip of metal an intermediate part of which is secured to a horizontal stub shaft and an adjacent part of which provides a bearing for a weight arm, eye assemblies mounted on said stub shaft, each eye assembly including an outer shell rotatable with the stub shaft about a horizontal axis, and an eye housed within the outer shell and oscillatable from side to side about an upright axis, eye arms extending downwardly and rearwardly from said eyes, a wire weight arm extending downwardly from the aforesaid bearing and carrying a weight at its lower end, and links extending from the weight arm to the eye arms, the upper and lower ends of the aforesaid metal strip being so disposed as to act as motion-limiting stops for the sleeping movement of the eye set.

9. A rolling eye set for a doll, said eye set comprising a generally upright strip of metal an intermediate part of which is secured to a horizontal stub shaft and an adjacent part of which is folded and shaped to provide a bearing for a weight arm, eye assemblies mounted on said stub shaft, each eye assembly including an outer shell rotatable with the stub shaft about a horizontal axis, and an eye housed within the outer shell and oscillatable from side to side about an upright axis, eye arms extending downwardly and rearwardly from said eyes, a wire weight arm extending downwardly from the aforesaid bearing and carrying a weight at its lower end, and thin wire links extending from the weight arm to the eye arms, the inner ends of said links being loosely curled about the weight arm, and the outer ends of said links being bent and passed through perforations in the eye arms.

10. A rolling eye set for a doll, said eye set comprising a generally upright strip of metal an intermediate part of which is secured to a horizontal stub shaft and an adjacent part of which is folded and shaped to provide a bearing for a weight arm, eye assemblies mounted on said stub shaft, each eye assembly including an outer shell rotatable with the stub shaft about a horizontal axis, and an eye housed within the

outer shell and oscillatable from side to side about an upright axis, eye arms extending downwardly and rearwardly from said eyes, a wire weight arm extending downwardly from the aforesaid bearing and carrying a weight at its lower end, and thin wire links extending from the weight arm to the eye arms, the inner ends of said links being loosely curled about the weight arm, said weight arm having means to hold the links in position, the outer ends of said links being bent and passed through perforations in the eye arms, the upper and lower ends of the aforesaid metal strip being so disposed as to act as motion-limiting stops for the sleeping movement of the eye set.

11. A rolling eye assembly for a doll, said eye assembly comprising an outer shell, means mounting the same for oscillation about a horizontal axis, a generally hemispherical eye disposed within the outer shell, said eye having an open back, the forward portion of the outer shell being cut away to expose the eye, said eye having bearing holes at the top and bottom thereof, said outer shell being pierced inwardly at the top and bottom in such a manner that the metal of the outer shell is excised or extruded in the bearing holes and acts to pivot the eye from side to side or rolling movement of the eye, and a combination back plate and rearwardly projecting eye arm formed out of a single piece of sheet metal, the ends of said back plate being interlocked with the rear edge of the eye in order to secure the back plate and eye together and thereby connect the eye arm to the eye, said back plate lying in an upright plane such as to at least partially close the open back of the eye.

12. An eye assembly including a cylindrical collar projecting therefrom, a round shaft on which the eye assembly and collar are adjustably mounted, a split spring steel bushing on the end of said shaft with an appreciable space at the split between the ends of the bushing, the aforesaid cylindrical collar being received over said bushing, said bushing fitting one of the parts frictionally, and the other part having a key received in the space between the ends of the bushing to prevent relative rotation of the eye assembly and the shaft.

13. An eye assembly including a cylindrical collar projecting therefrom, a round shaft on which the eye assembly and collar are adjustably mounted, a split spring steel busing on the end of said shaft, the diameter of the shaft being such that it opens the bushing enough to provide an appreciable space at the split between the ends of the bushing, said collar being freely slidably received over the bushing and having a key indented therein, said key being received in the space between the ends of the bushing to prevent relative rotation of the eye assembly and the shaft, the frictional grip of the spring bushing on the shaft affording manual rotative adjustment of the eye assembly relative to the shaft, while the slidable fit of the collar on the bushing affords a free axis self-adjustment of the eye assembly relative to the shaft.

14. A doll eye assembly comprising a metallic eye shell open at the back, the rear edge of which is recessed at opposite points, eye mounting means for movably supporting the eye, a combination back plate and eye controlling arm formed out of a single piece of sheet metal, said arm projecting rearwardly from said plate for connection to eye moving mechanism, said eye moving mechanism being independent of said eye mounting means, said plate being notched or shouldered at its ends leaving tenons dimensioned to be received in said recesses, said shoulders preventing longitudinal movement of the back plate relative to the eye shell, the peripheral edge of the eye shell being compressed inwardly somewhat at opposite sides of the tenons in order to somewhat close the recesses and thereby lock the back plate on the eye shell, said back plate lying in an upright plane such as to at least partially close the open back of the eye.

15. A rolling doll eye assembly comprising an approximately hemispherical metallic eye shell which is open at the back, eye mounting means pivoting the same on a vertical axis for side to side oscillation, a combination back plate and eye controlling arm formed out of a single piece of sheet metal, said back plate extending across the back of the eye, said sheet metal arm projecting rearwardly from and transversely of the plane of said back plate for connection to a suitable eye moving mechanism, said eye moving mechanism being independent of said eye mounting means, the ends of said back plate and the rear edge of the eye shell being appropriately matingly recessed and interlocked to secure the same together, thereby fixing the sheet metal arm to the eye shell.

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