Aug. 16, 1927. 1,639,033

L. J. GRUBMAN

MEANS FOR FORMING EYE OPENINGS IN THE HEADS OF DOLLS AND OTHER FIGURE TOYS

Filed Oct. 12, 1926 2 Sheets-Sheet 1

Fig. 3.

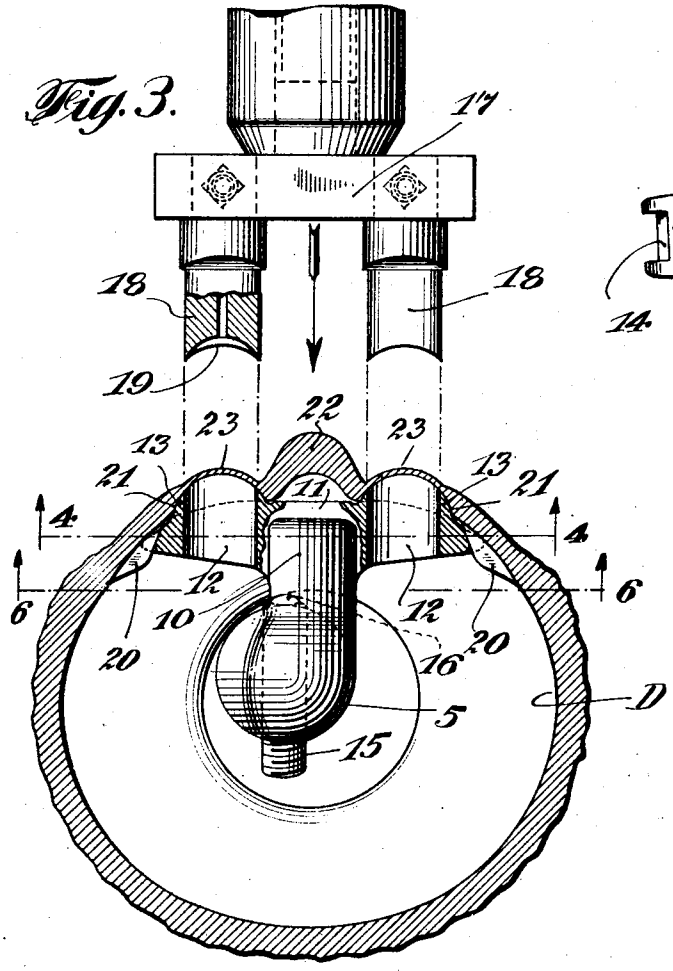


Fig. 1.

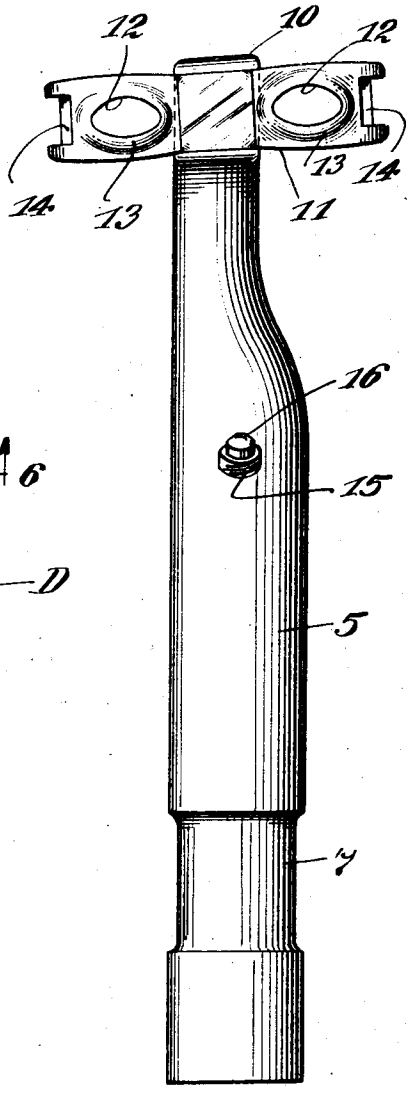
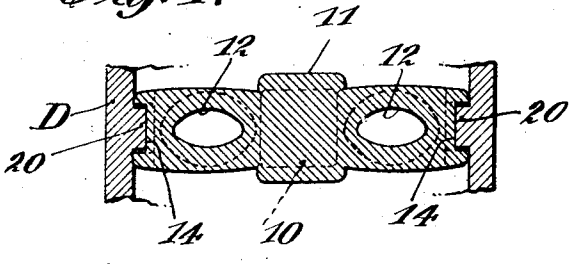


Fig. 4.



INVENTOR

Leo J. Grubman

BY C. P. Goepel

his ATTORNEY

Aug. 16, 1927. 1,639,033

L. J. GRUBMAN

MEANS FOR FORMING EYE OPENINGS IN THE HEADS OF DOLLS AND OTHER FIGURE TOYS

Filed Oct. 12, 1926 2 Sheets-Sheet 2

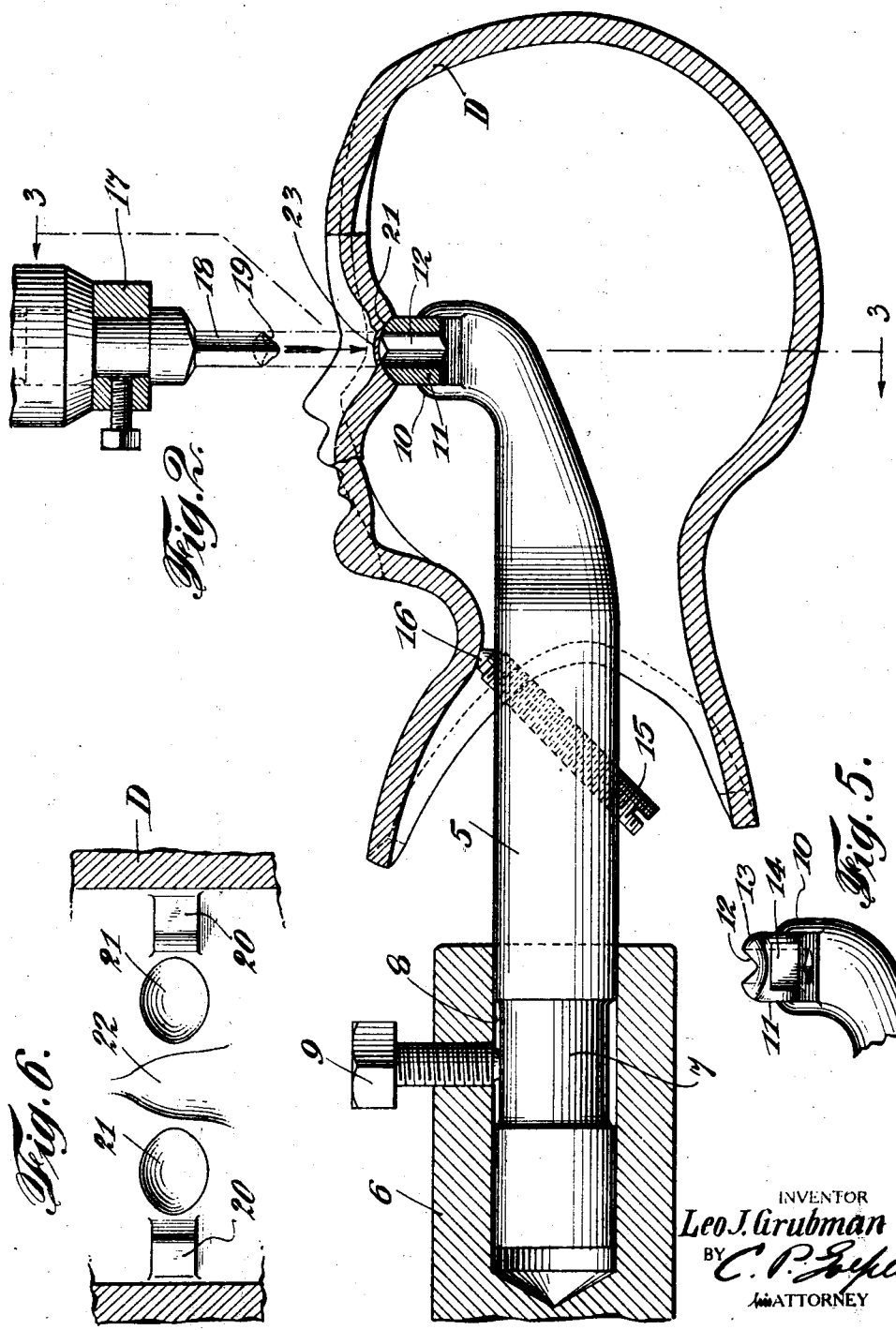


Fig. 2.

Fig. 6.

Fig. 5.

INVENTOR
Leo J. Grubman
BY C. P. Byrd
ATTORNEY

Patented Aug. 16, 1927. 1,639,033

UNITED STATES PATENT OFFICE.

LEO J. GRUBMAN, OF BELLE HARBOR, NEW YORK, ASSIGNOR TO GRUBMAN ENGINEERING & MANUFACTURING CO., INC., OF LONG ISLAND CITY, NEW YORK, A CORPORATION OF NEW YORK.

MEANS FOR FORMING EYE OPENINGS IN THE HEADS OF DOLLS AND OTHER FIGURE TOYS.

Application filed October 12, 1926. Serial No. 141,207.

This invention relates to means for forming eye openings in the heads of dolls and other figure toys, and has for its primary object to expedite this operation in the manufacture of such toys while at the same time obtaining a higher degree of accuracy in the location of said openings with respect to each other and in relation to the other molded facial features of the head than is possible with the use of methods and means heretofore employed for this purpose in the art.

More particularly, it is the essential purpose of my present improvements to provide a simple and inexpensive means whereby the two eye openings may be simultaneously formed through the wall of the doll head, after the head has otherwise been substantially completed and without necessitating the opening of the top of the head. To this end, in one practical embodiment of the invention, I provide a female die anvil mounted upon a relatively fixed support and which is so constructed and arranged that the said anvil may, by proper manipulation of the doll head be passed through the neck thereof and properly located or positioned with respect to internal eye sockets or cavities formed in the doll head wall. For this purpose, it is an important feature of my invention to provide the doll head wall and said die anvil with suitably formed coacting means whereby the outer walls of said sockets through which the openings are to be cut may be accurately positioned with respect to spaced openings in said die anvil and in relation to the spaced cutters of the male die member.

With the above and other objects in view, the invention consists in the improved means for forming eye openings in doll heads and in the form, construction and relative arrangement of its several parts as will be hereinafter more fully described, illustrated in the accompanying drawings, and subsequently incorporated in the subjoined claims.

In the drawings, wherein I have disclosed one simple and practical embodiment of the invention, and in which similar reference characters designate corresponding parts throughout the several views,—

Figure 1 is a plan view of a female die anvil and its support;

Fig. 2 is a longitudinal sectional view through a doll head showing the same arranged upon the female die anvil in proper position for the operation of the cutting die members;

Fig. 3 is a sectional view taken substantially on the line 3—3 of Fig. 2;

Fig. 4 is a horizontal section taken on the line 4—4 of Fig. 3;

Fig. 5 is a detail end elevation of the female die member, and

Fig. 6 is a fragmentary sectional view through the doll head removed from the die anvil taken substantially on the line 6—6 of Fig. 3.

Referring in detail to the drawings, 5 designates a bar or rod of suitable length and preferably of cylindrical form which is adapted to be mounted at one of its ends in a relatively fixed support 6. As herein shown, this end of the rod 5 is provided with a portion 7 of reduced diameter, and this end portion of said rod is adapted to be fitted within the socket or bore 8 of the support 6. A suitable set screw 9 is threaded in this support and is adapted to frictionally bear upon the reduced portion 7 of the rod 5 to fixedly hold said rod against rotative or longitudinal movement relative to the support. This reduced section 7 of the rod is however, of sufficient length to permit a certain amount of axial adjustment of said rod on the support.

The other end of the rod 5 is tapered and reduced in diameter and terminates in an angularly offset head 10. The female die anvil generally indicated at 11 is integrally formed with or suitably fixed to the head 10. As herein shown, this anvil is of narrow elongated form and projects for an equal distance from opposite sides of the head 10. It will be noted that the longitudinal axis of this anvil 11, or the major axial line of the openings 12 which are formed through the opposite end portions of said anvil does not extend at right angles to the longitudinal axis of the rod 5 but is slightly offset from such right angular relation. The reason for this arrangement will hereinafter be explained. The parts of the anvil 11 at the upper side thereof through which the openings 12 are formed are of semi-spherical shape as indicated at 13, projecting above

the plane of the anvil surface between said spaced openings. These openings 12 are of elliptical form to correspond in size and shape with the eye openings to be formed through the wall of the doll head. At its opposite ends the die anvil 11 is provided with suitably formed recesses 14 therein.

In the intermediate portion of the rod 5 and extending at an angle with respect to the rod axis an adjusting screw 15 is threaded therein and has a reduced conically formed end portion 16.

With the die anvil 11 a vertically movable male die member generally indicated at 17 is adapted to cooperate, said die member carrying the spaced cutters 18, the cross sectional form of which corresponds with the form of the openings 12 in the anvil 11. The cutting edges 19 of these cutters 18 are concave, the radius thereof substantially corresponding to the radius of the semi-spherical portions 13 of the anvil 11.

The doll head generally indicated at D is molded or otherwise fashioned of wood pulp, papier mâché or other composition material, and in the molding of this head, internal lugs or projections 20 are formed on opposite sides of the front wall section of the doll head and in accurate alignment with a horizontal plane passing through the geometrical centers of spaced cavities or sockets 21 which are formed in the inner side of the front wall of the doll head in substantially equi-distant spaced relation from the vertical center line of the head and at opposite sides of the nose indicated at 22. The radius of these sockets 21 also substantially corresponds to the radius of the semi-spherical projections 13 on the die anvil 11. These sockets are of such depth with relation to the thickness of the doll head wall as to provide relatively thin wall sections 23 closing the outer sides of the sockets.

In dolls provided with oscillating or moving eyes, the opening through the neck of the doll head is often of such size that, difficulty is encountered in inserting the anvil. However, the angular arrangement of the die anvil 11 on the end of its supporting rod 5, as above explained, makes it possible to so manipulate the doll head that the neck thereof may be passed over said die anvil so as to position the anvil within the head. Although the head is otherwise completely closed, the operator may readily locate the head in the proper position upon the die anvil, since he will be informed by his sense of touch when the lugs 20 on the wall of the doll head enter the recesses 14 in the ends of the die anvil 11 whereby the protuberant or semi-spherical portions 13 of said anvil are seated in the respective sockets 21 of the doll head wall. There is sufficient play of the lugs 20 in recesses 14 to permit of a certain amount of adjustment by means of the screw 15. The end 16 of this screw provides a rest or support against which the neck wall of the doll head bears and by adjusting said screw, the doll head may be slightly rocked or tilted in a vertical plane as required for the particular model of head, to thereby properly position the wall sections 23 of said doll head in relation to the openings 12 through the die anvil 11. By means of a foot treadle or other suitable operating means the male die member 17 is then moved downwardly as indicated in Fig. 3 so that the cutters 18 simultaneously cut through the wall sections 23 of the doll head and pass downwardly through the openings 12 in the anvil 11, the cut out sections of the doll head wall being deposited within said head from which they are subsequently removed. In this manner, it will be evident that the two eye openings thus formed through the wall of the doll head will be of precisely the same shape and size and in proper symmetrical relation to the sculptured outlines of the respective eyelids. Such accuracy in the formation of these openings through the doll head wall, is essential in order to secure uniformity of product so that it is possible to interchangeably use a standard eye mounting in heads of the same model.

After the eye openings have thus been formed, the doll head is removed from the anvil 11, and the eye sockets are reamed out so as to insure exact coincidence between the centers of the eye sockets and the centers of the eye openings. For this purpose, I preferably use the machine illustrated and described in my co-pending application for patent Serial No. 32,301, filed May 23, 1925, and which may be controlled and operated with a high degree of accuracy through the neck of the doll head and without necessitating that the top of the head be opened for this purpose. In so far as I am aware, in the prior art practices, the eye openings were cut by careful manual adjustment of the punches with relation to the outlines of the eyelids or accurate positioning of the head relative to the punches. Such separate operations are tedious, time-consuming and attended usually by a more or less inaccurate location of the two eye openings so that their centers are out of symmetrical relation with the modeled eyelids.

From the foregoing description considered in connection with the accompanying drawings, the construction, manner of operation and several advantages of my present invention will be clearly and fully understood. It will be seen that I have produced a very simple and highly efficient means for greatly expediting the formation of spaced eye openings in the walls of doll heads and other figure toys and which will practically eliminate the inaccuracies above referred to and

insure absolute uniformity in product so that all doll heads of the same size produced from the same mold will have the eye openings thereof correspondingly located in exactly the same symmetrical relation to the other facial features of the doll head wall. The eye mountings are thus interchangeable in different doll heads of the same size and conformation. It will therefore, be understood that the essential feature of my present invention resides in the mounting and arrangement of the anvil and the die cutter in definite cooperative relation to each other and in the provision of coacting means on the anvil and the wall of the doll head whereby a predetermined section or area of the doll head wall is accurately positioned with respect to the anvil for engagement by the cutting die.

I have herein disclosed an embodiment of my invention, which I have found to be entirely satisfactory in practical operation. Nevertheless, it is to be understood that the essential features thereof might also be incorporated in various other alternative structures, and I accordingly reserve the privilege of resorting to all such legitimate mechanical changes therein as may be fairly embodied within the spirit and scope of the invention as claimed.

I claim:

1. Means for forming spaced eye openings through the wall of a doll head including a support having spaced portions adapted to be positioned within the doll head, means for positioning said portions in definite contacting relation with spaced parts of the doll head wall, and die cutters adapted to cut through said spaced parts of the head wall to form the eye openings therethrough in accurate predetermined relation to the other molded features of the head wall.

2. Means for forming spaced eye openings through the wall of a doll head including a support having spaced portions adapted to be positioned within the doll head, means for positioning said supporting portions in definite contacting relation with spaced parts of the doll head wall, each of said supporting portions having an opening therethrough, and die cutters aligned with the respective openings adapted to cut through said head wall from the opposite side thereof and form the spaced eye openings through said wall in accurate relation to the other molded features of the head.

3. Means for forming spaced eye openings through the wall of a doll head including spaced parts each having an opening therethrough, means for positioning said parts in definite contacting relation with one side of the doll head wall, and die cutters aligned with the respective openings adapted to cut through said head wall from the opposite side thereof and enter the respective openings to thereby form spaced eye openings in the head wall in accurate relation to the other molded features of the head.

4. Means for forming spaced eye openings through the wall of a doll head including spaced parts adapted to be positioned within the doll head, said parts and the doll head wall having coacting means to position spaced portions of the head wall in definite contacting relation to said parts, and die cutters adapted to cut through said portions of the head wall from the outer side thereof and thereby produce the spaced eye openings in accurate relation to the other molded features of the doll head.

5. Means for forming spaced eye openings through the wall of a doll head including spaced relatively fixed parts adapted for passage through the neck of the doll head, said parts and the doll head wall having coacting means to position spaced portions of said wall in definite contacting relation with said parts, additional means for adjusting the doll head relative to said spaced parts, and die cutters adapted to cut through said spaced portions of the head wall from the outer side thereof and form the eye openings through said wall in accurate relation to the other molded features of the doll head.

6. Means for forming spaced eye openings through the wall of a doll head including an anvil mounted upon a fixed support and having spaced parts, means for definitely positioning said spaced parts of the anvil in contacting relation with one side of the doll head wall, and movable die cutters operating in the plane of the respective portions of said anvil from the opposite side of the doll head wall and adapted to cut through the wall portions engaged with said spaced parts of the anvil to thereby produce eye openings through said wall in accurate relation to the other molded features of the doll head.

7. Means for forming spaced eye openings through the wall of a doll head including an anvil having spaced parts each provided with an opening therethrough, coacting means on the opposite ends of said anvil and the side walls of the doll head to definitely position said parts in contacting relation with spaced portions of the head wall, and die cutters movable in the plane of the respective spaced portions of the anvil from the opposite side of said wall and adapted to cut through said spaced portions of the head wall to form the eye openings in accurate relation to the other molded features of the doll head.

8. Means for forming spaced eye openings through the wall of a doll head including an anvil having spaced parts each provided with an opening therethrough, said anvil adapted for insertion through the neck of the doll head, the opposite ends of the anvil and the side walls of the doll head

having coacting means to position spaced portions of the front wall of the doll head in definite contacting relation with the spaced parts of the anvil, and spaced die cutters aligned with the respective openings through the parts of the anvil and adapted to cut through said spaced portions of the doll head wall from the opposite side thereof to produce the eye openings in accurate relation to the other molded features of the doll head.

9. In combination, an anvil adapted for insertion through the neck of a doll head and adapted to be positioned in supporting contact with the front wall thereof, said anvil having spaced openings therein, and cutting die members movable relative to said anvil adapted to cut through the doll head wall to simultaneously form spaced eye openings therein, said die members entering the respective openings in said anvil.

10. In combination, an anvil adapted for insertion through the neck of a doll head and having spaced semi-spherical projections adapted for engagement in spaced sockets in the front wall of the doll head, and each of said portions of the anvil having an opening therethrough, and cutting die members aligned with the respective openings of the anvil and operable from the outer side of the doll head to cut through the socket walls and enter said openings of the anvil to thereby form spaced eye openings in the head wall in accurate symmetrical relation to the other molded features thereof.

11. In combination, a supporting rod and an elongated anvil on one end of said rod positioned at other than a right angle to the axis of said rod to enable the anvil to pass through the neck of a doll head, coacting means on the anvil and the doll head wall to definitely position spaced parts of the anvil in contacting relation with the front wall of the doll head, each of said parts of the anvil having an opening therethrough, and simultaneously operable die cutters aligned with the respective openings and adapted to enter the same from the exterior of the doll head and thereby form spaced eye openings in the head wall in accurate symmetrical relation to the other molded features thereof.

12. In combination, a supporting rod and an elongated anvil on one end thereof positioned at other than a right angle to the axis of said rod and adapted for passage through the neck of a doll head, the opposite side walls of the doll head and the ends of the anvil having coacting lugs and recesses to position spaced parts of the anvil in definite contacting relation with the front wall of the doll head, each of said anvil parts having an opening therethrough, and simultaneously operable cutters aligned with the respective openings and adapted to enter the same from the outer side of the doll head and to thereby produce eye openings through the head wall in accurate symmetrical relation to the other molded features thereof.

13. In combination, an anvil, a cutting die, one of said parts being mounted for movement relative to the other in a definite predetermined path, and said anvil having means for cooperative engagement with means formed on the wall of a doll head to accurately position a section of the doll head wall with relation to said anvil and the cutting die whereby an eye opening will be cut through said wall by the die in accurate relation to the other molded features of the doll head wall.

14. In combination, an anvil having an opening therein, a cutting die corresponding in cross sectional shape to said opening and movable therethrough, and said anvil having means to coact with means internally formed on the wall of a doll head to accurately position a section of the doll head wall over said opening and in the path of movement of the cutting die to thereby form an eye opening through the head wall in accurate relation to the other molded features of the head.

15. In a tool of the character described, an anvil having two spaced parts adapted for engagement with the inner side of the front wall of a doll head and each provided with an eye-shaped opening therethrough to receive a correspondingly shaped relatively movable cutting die, and a third part on said tool for engagement with the wall of the doll head to support said head with respect to said spaced parts in a predetermined plane relative to the path of movement of the cutting dies.

16. In a tool of the character described, an anvil having two spaced parts adapted for engagement with the inner side of the front wall of a doll head and each provided with an eye-shaped opening therethrough to receive a correspondingly shaped relatively movable cutting die, and an adjustable member adapted for contact with the wall of the doll head to support said head with respect to said spaced parts in a predetermined plane relative to the path of movement of the cutting dies.

In testimony that I claim the foregoing as my invention, I have signed my name hereto.

LEO J. GRUBMAN.