Feb. 10, 1931. S. MARCUS 1,792,174

METHOD AND MEANS FOR PRODUCING DOLL HEADS

Filed July 3, 1926 2 Sheets-Sheet 1

Fig. 1.

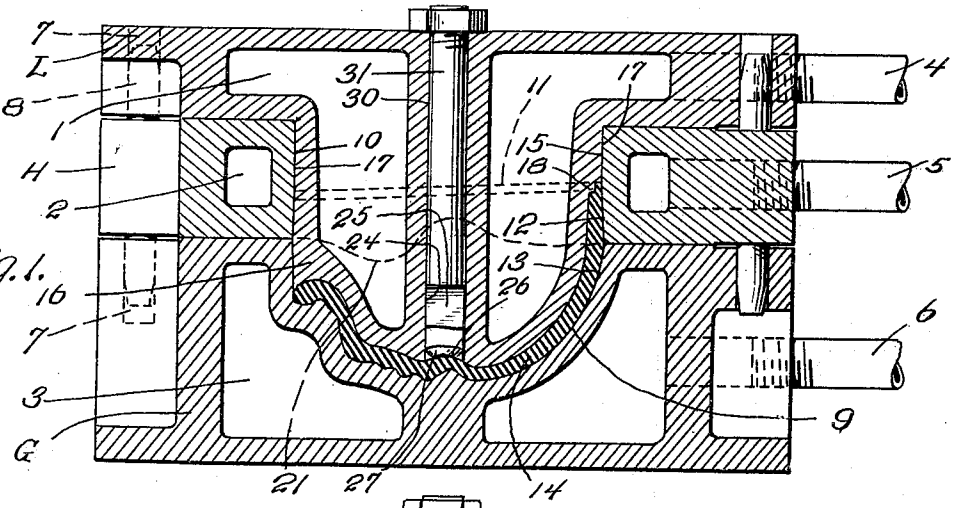
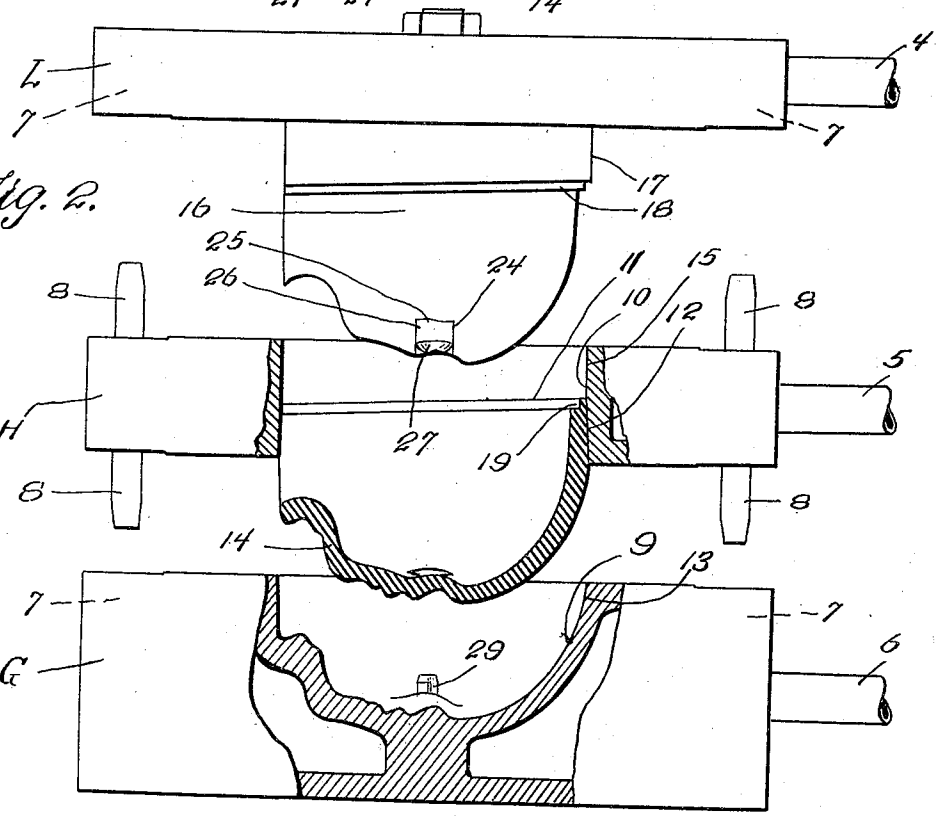


Fig. 2.



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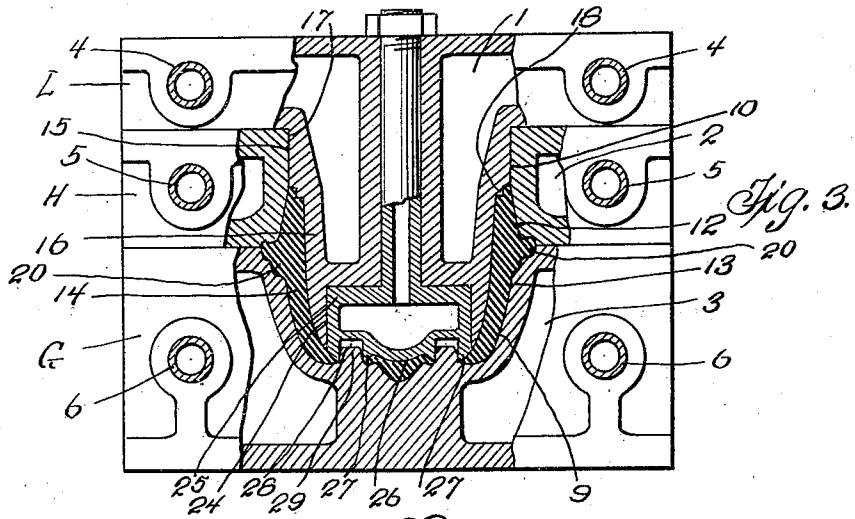


Fig. 3.

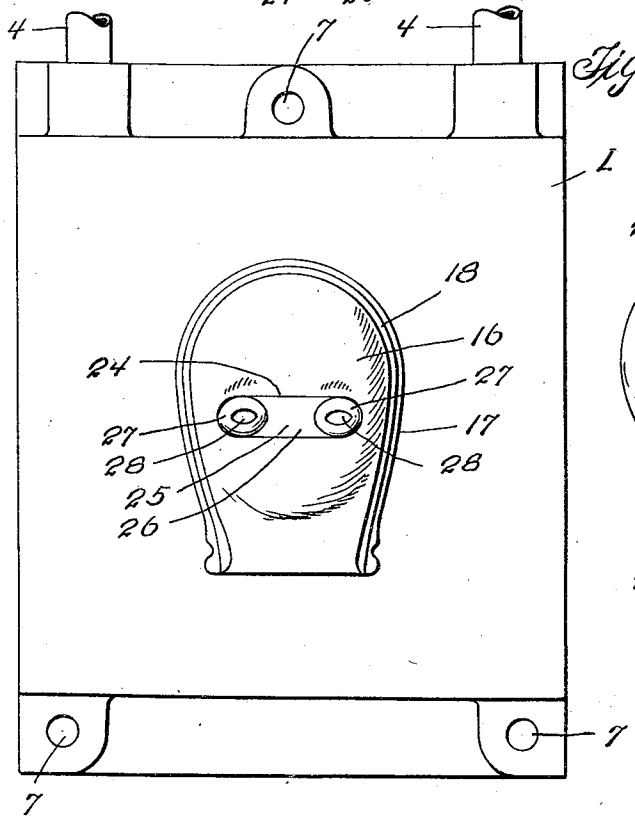


Fig. 4

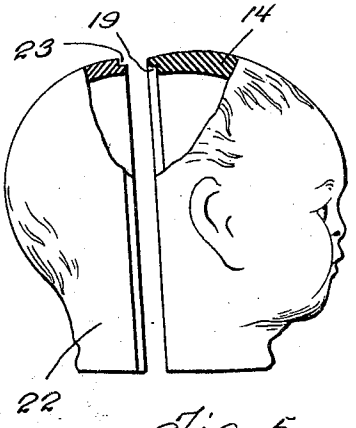


Fig. 5.

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UNITED STATES PATENT OFFICE

SAMUEL MARCUS, OF BROOKLYN, NEW YORK, ASSIGNOR, BY MESNE ASSIGNMENTS, TO MARKON MANUFACTURING CO. INC., OF NEW YORK, N. Y., A CORPORATION OF NEW YORK

METHOD AND MEANS FOR PRODUCING DOLL HEADS

Application filed July 3, 1926. Serial No. 120,347.

This invention relates to a method for producing doll heads and similar articles, and to means for performing said method.

An object of the invention is to provide a method by which doll heads and similar articles may be rapidly produced and by which the heads produced will be of great accuracy in their various details as to form.

A more detailed object is to provide an improved method whereby the two halves or sections of a doll head may be joined to make up a complete head.

A further object is to provide a tool by which to carry out this improved method.

A further detailed object is to provide a moulding tool within which the doll head, that is one of the halves or sections of the head, may be moulded under heavy pressure and subject to desired heat conditions, and by part of which the moulded head section may be temporarily supported after the remainder of the mould is removed.

A further object is to provide a mould having an intermediate part or member constructed to serve as a temporary carrier for the moulded product during and following the separation of the two opposite parts or members of the mould, whereby to facilitate the convenient removal and discharge of the product from the mould.

A further detailed object is to provide a mould for forming doll heads and having a separately formed and readily interchangeable section including the part for forming the two eye sockets and immediately adjacent parts of the doll head.

Other objects and aims of the invention, more or less specific than those referred to above, will be in part obvious and in part pointed out in the course of the following description of the elements, combinations, arrangements of parts and applications of principles constituting the invention; and the scope of protection contemplated will be indicated in the appended claims.

In the accompanying drawings which are to be taken as a part of this specification, and in which I have shown merely a preferred form of embodiment of the invention:—

Fig. 1 is a vertical sectional view through a mould constructed in accordance with this invention, the parts of the mould being shown in their nested relation with a doll head in process of formation there-between.

Fig. 2 is a view similar to that seen in Fig. 1 but the three main parts of the mould being shown in a separated condition.

Fig. 3 is a vertical sectional view taken transverse to the plane of the section Fig. 1.

Fig. 4 is a bottom plan view of the upper part or member of the mould.

Fig. 5 is a transverse sectional view through the front and rear sections of a doll head, the front section being the product of the mould herein illustrated and the rear section being the product of a mould similar to that herein illustrated except that whereas the present mould embodies parts having a surface contour corresponding to the contour desired for the face portion of the doll head, the second mould has parts corresponding to the contour desired for the back portion of the doll head.

Referring to the drawings for describing in detail the method and structure therein illustrated the reference character L indicates the top part or member of the mould, the reference character G the bottom part or member of the mould and the reference character H the intermediate part or member of the mould.

Each of these members is preferably formed as a hollow metallic casting, the interiors thereof as 1, 2 and 3 respectively being adapted to contain a heating fluid such as steam, hot water, or other suitable medium supplied thereto through feed pipes 4, 5 and 6 respectively, it being understood that these pipes communicate with any appropriate source of the heating medium and are made suitably flexible to permit independent movement of the members L, H and G during the opening and the closing of the mould.

The top and bottom members L and G are furnished with the usual dowel seats 7—7 and the intermediate member H carries oppositely projecting dowel pins 8—8 for engagement within the seats 7 to guide the mould

members during their opening and closing movements.

The bottom member G has a central depression as 9 formed in its upper face said depression having the surface contour desired for the exterior surface of the face portion of the doll head.

The intermediate member H has a central opening as 10 formed entirely therethrough of a size and contour to register with the upper edge of the depression 9 and provide an upward extension of the walls of said depression. The surface contour of the walls of this opening, below the plane of the line indicated by the reference character 11 in Fig. 1 as at 12, corresponds to the contour desired for side and top portions of the exterior surface of the doll head, it being noted that this surface portion of the walls of said opening is given only a very slight taper or "draft" as compared to the taper or draft present in the depression 9, as at 13, and that this difference is intended to permit the bottom member G of the mould to draw readily away from the moulded product, or doll head section 14, without likelihood of separating the product from the intermediate member H, as will be further on herein referred to.

Above the plane of the line 11 the side walls of the opening 10, as at 15, are substantially vertical and smooth.

The upper member L is provided with an extension 16 projecting downwardly therefrom through the opening 10 and into the depression 9 said extension constituting the "core" part of the mould. Below the plane of line 11 the surface of this extension or "core" part is of the size and contour desired for the interior surface of the doll head section and is modelled so as to provide ample draft to permit its ready removal upwardly in operation.

Above the plane of the line 11 the side walls of the extension, as at 17, are substantially straight and smooth and of a size and contour to slide as a sort of piston snugly within the straight smooth portion 15 of the opening in the intermediate member H.

Intermediately below the plane of line 11 the wall surface of the extension is stepped inwardly so as to provide a ledge as 18 disposed to form a corresponding marginal recess 19 at the upper or rear edge of the product 14 as will be readily understood.

In use, the three members of the mould are separated to or beyond the extent as seen in Fig. 2. A suitable quantity of mouldable material is placed within the depression 9 of the bottom member H after which the three members of the mould are brought together in suitably timed relation to each other so that the mould members will finally occupy the position as seen in Fig. 1 with the mouldable material filling the space between the mould members to thereby constitute the doll head, or product, 14, the final movement in bringing the mould members together being a sliding movement of the piston portion 17 downwardly along the portion 15 of the opening 10 thereby confining the mouldable material. The pressure employed is preferably very heavy so that the mouldable material is greatly condensed and solidified and made to accurately conform to every feature of contour of the mating mould surfaces.

During the time while the mould members are compressing the material being moulded the mould members are maintained suitably heated by the fluid within the cavities 1, 2 and 3 so that the material being moulded is at the same time being subjected to an appropriate degree of heat serving to further and more completely and quickly solidify the material preparatory to the separation of the mould members.

In separating the mould members the upper and bottom members L and G may be loosened and moved simultaneously if desired but it is preferable that the upper member L and the intermediate member H shall remain undisturbed while the bottom member is being loosened and relatively lowered away since by this means the moulded material product, or doll head, is held by its upper marginal portion in a vise-like grip between the opposing walls of the mould members L and H during the period of separation of the bottom member. Little or no likelihood is thereby permitted of the product following the bottom member.

After the bottom member has been loosened then the upper member may be loosened and lifted away leaving the product suspended by its upper marginal portion within the opening 10 of the intermediate mould member. Owing to the incline or draft of the walls of the opening 10 below the plane of line 11 no possibility exists of the product following the upper member.

With the bottom member G and the upper member L separated from the intermediate member the product may be thereafter readily removed by hand or otherwise from its connection with the intermediate member. A slight downward tap against the product is ordinarily sufficient.

While I have hereinabove referred to the taper or "draft" provided within the opening 10 of the intermediate member as being very slight, it will be understood that this relatively slight "draft" need not be uniform throughout the circumference of the opening. At some point, as for instance at the ear portions of the doll head, indicated by the reference characters 20—20 in Fig. 3, the "draft" is quite pronounced to thereby give appropriate prominence to said ear portions, while at other points the "draft" may be practically nil. The essential requirement in this connection is simply that the "draft" shall be

such as to provide a suitable friction grip between the moulded product and the walls of the opening 10 to hold the product connected with the intermediate mould member until purposely discharged therefrom by applied pressure.

In addition to providing a temporary support or hanger for the product during and following the opening of the mould the intermediate mould section also provides for a line of separation as at 21 of the mould members in the region or plane of the doll head ears without requiring a corresponding line of separation between the front and back sections of the finished doll head. A more accurate and life-like moulding of the ear portions of the doll head is thus rendered possible and at the same time the upper or rear edge of the product is maintained on a single flat plane which is of smooth and regular curvature as clearly seen by reference to the part 18 in Fig. 5 instead of being of irregular contour following the outline of the ears as has been heretofore customary in the making of two-part doll heads.

The back section as 22 of the doll head has its forward edge portion, as at 23, shaped to mate with the shape of the rear edge of the front section, as clearly indicated in Fig. 6, the two parts interfitting and telescoping one into the other. A suitable adhesive is employed to hold the parts together. The joint is uniform and accurate throughout, and owing to the overlapping engagement of the parts very little if any operation is required to complete the outside surface.

It is intended in fact that the pressure exerted for forming the cast product shall be sufficiently great so that the surface of the product shall be ready for immediate tinting and finishing without preliminary filling and smoothing with heavy putty and paint as has been heretofore the practice.

At the proper location in the upper mould member L there is provided a recess 24 into which is fitted a separately formed member 25 having its under edge or surface portion 26 shaped to form the interior contour of the doll head at and between the eye-sockets, said surface 26 including a pair of eye-socket forming parts 27—27. This member 25 is made separate from the remainder of the mould in order to facilitate the more accurate shaping of its surface portion 26 and the eye-socket forming parts 27—27, as well as to facilitate its interchange with other members having slightly differing surface formation as may be required for the manufacture of doll heads having different facial characteristics or as may be required for the mounting of eye sets of different constructions.

The eye-socket forming parts 27—27 each have a central opening as 28 therethrough into which projects a lug as 29 carried by the bottom mould member H thus insuring perfect alignment of the parts.

A suitable opening as 30 is provided through the member L through which a bolt or the like as 31 may extend by which to hold the member 25 in position.

The member 25, and its bolt 31, are preferably formed hollow in order to permit of a circulation of air or other cooling medium into position adjacent the eye-socket forming parts 27—27, this being desirable in some instances to prevent excessive heating of the relatively thin walls for the cast product in the region of the eye openings thereof.

As many changes could be made in this construction without departing from the scope of the invention as defined in the following claims, it is intended that all matter contained in the above description or shown in the accompanying drawings, shall be interpreted as illustrative only and not in a limiting sense.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. The herein described method of producing moulded doll heads having eye openings therethrough, which method consists in providing suitable mould members, placing a quantity of mouldable material between said mould members while said mould members are separated, forcing said mould members together to thereby mould the mouldable material, applying heat to said mould members to heat the mouldable material and meanwhile applying a cooling medium to a part of the mould adjacent said eye openings.

2. A tool within which to form moulded articles, said tool comprising upper and lower mould members and an intermediate mould member, said three mould members being shaped to provide a cavity between them to receive the mouldable material, each of said mould members being hollow, means connected with said mould members by which to conduct a heating medium into the hollows of all of said mould members respectively, and means whereby a cooling medium may also be conducted to a part of one of said mould members.

3. A tool within which to form moulded articles, said tool comprising upper and lower mould members and an intermediate mould member, said three mould members being shaped to provide a cavity between them to receive the mouldable material, each of said mould members being hollow, means connected with said mould members by which to conduct a heating medium into the hollows of said mould members respectively, one of said mould members having a separately formed portion removably conecting therewith providing a part of the moulding surface of said mould member, and means by which to alter the temperature of said sep-

arately formed part with respect to the remainder of said mould member.

4. A tool within which to mould doll heads having eye openings therethrough, said tool comprising upper and lower mould members and an intermediate mould member, said three mould members being shaped to provide a cavity between them to receive the mouldable material, and one of said mould members having a separately formed part removably connected therewith having a moulding surface portion shaped to provide said eye openings, together with means by which to independently control the temperature of said separately formed part with respect to the remainder of the tool.

5. A tool within which to mould the front section of a doll head, said tool comprising upper and lower mould members and an intermediate mould member, said three mould members being shaped to provide a cavity between them to receive the mouldable material, the intermediate mould member and one of said other mould members being shaped to provide a parting line in the plane of the ear portions of the doll head, and said intermediate mould member and the remaining mould member being shaped to provide a parting line at one side of the plane of the ear portions of the head and to form a smooth and regularly curved edge surface upon the moulded doll head section for attachment to a rear section of the doll head.

6. A tool within which to form moulded doll heads, said tool comprising upper and lower mould members and an intermediate mould member, the three mould members being shaped to provide a cavity between them to receive the mouldable material, the intermediate mould member and the lower mould member being shaped to provide a parting line in the plane of the ear projections of the doll head, the lower mould member being of a generally concaved shape having facial characteristics therein and flaring abruptly outwardly and upwardly to the parting line to thus provide relatively great draft and facilitate its separation from the finished moulded material, the upper mould member comprising a generally semispherically shaped projection for extending into the cavity of the lower mould member to thereby compress the mouldable material into shell like formation between itself and the lower mould member, the portion of the upper mould member which extends into the lower mould member flaring abruptly outwardly and upwardly from its lower end to thus provide relatively great draft and facilitate its separation from within the finished moulded material, the intermediate mould member having an opening through which the upper mould member extends, a portion of the wall of said opening being shaped to correspond with the desired shape of the moulded material from the mentioned parting line to the upper edge of the moulded material, and said portion of the wall of said opening being of relatively slight draft whereby the moulded material will adhere to the intermediate mould member upon separation of the upper and lower mould members.

7. A tool within which to form moulded doll heads, said tool comprising upper and lower lower mould members and an intermediate mould member, the three mould members being shaped to provide a cavity between them to receive the moldable material, the intermediate mould member and the lower mould member being shaped to provide a parting line in the plane of the ear projections of the doll head, the lower mould member being of a generally concaved shape having facial characteristics therein, the upper mould member comprising a generally semispherically shaped projection for extending into the cavity of the lower mould member to thereby compress the mouldable material into shell like formation between itself and the lower mould member, the intermediate mould member having an opening through which the upper mould member extends, a portion of the wall of said opening being shaped to correspond with the desired shape of the moulded material from the mentioned parting line to the upper edge of the moulded material, a portion of the wall of said intermediate mould member beyond the upper edge of the moulded material being shaped to co-operate with an adjacent portion of the upper mould member to guide the upper mould member slidably in piston-like relation downwardly for confining the mouldable material.

In testimony whereof I affix my signature.

SAMUEL MARCUS.