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FORMING MECHANISM

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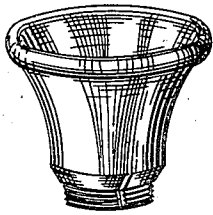


Fig. 3.

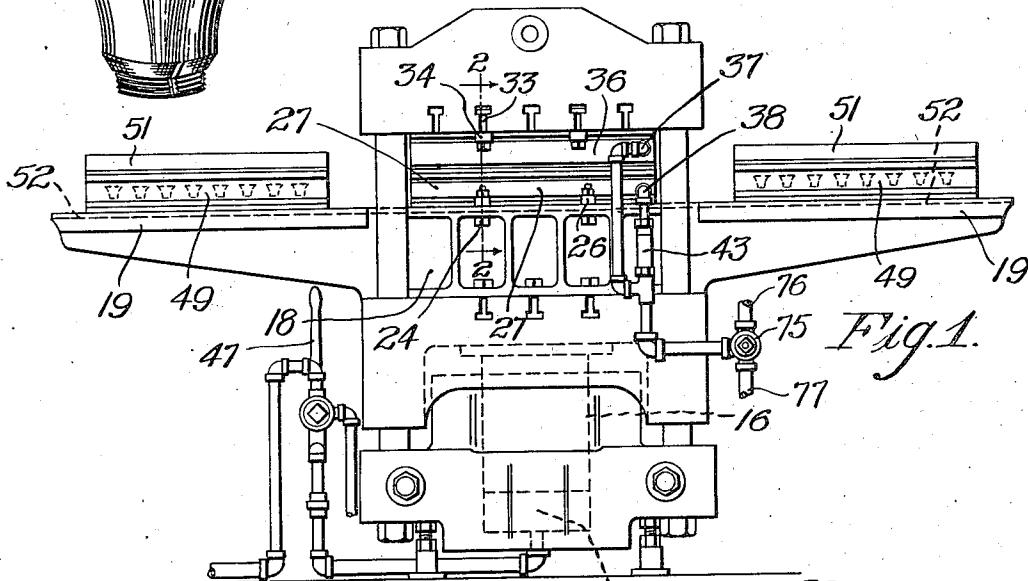


Fig. 1.

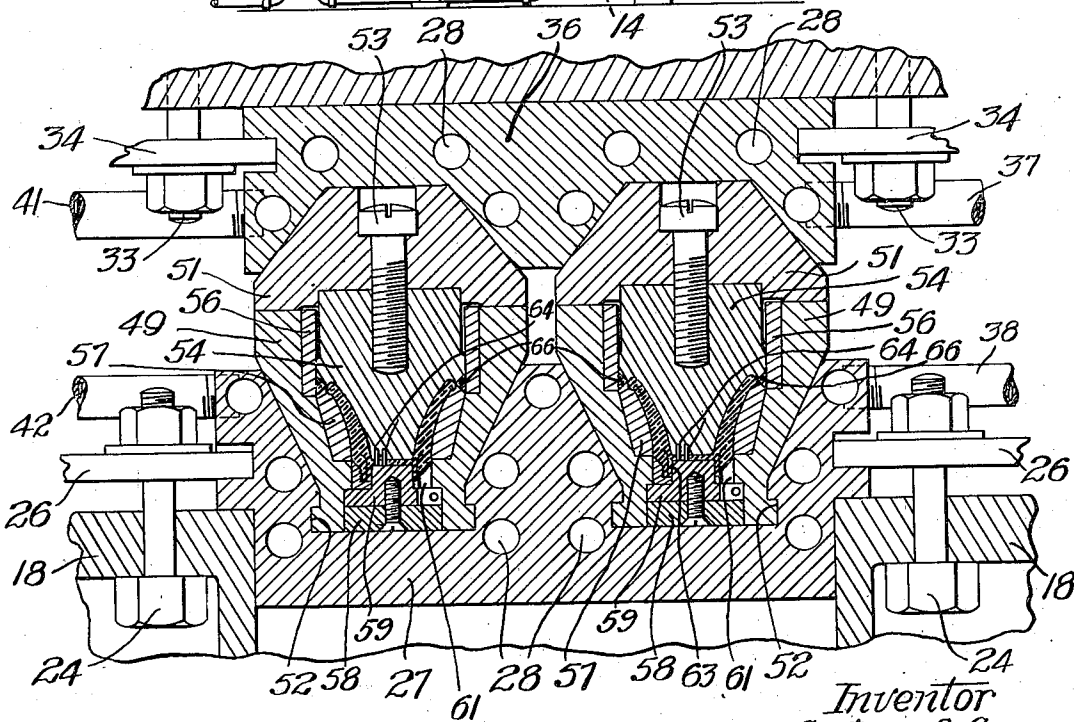


Fig. 2.

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FORMING MECHANISM.

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This application relates to a forming mechanism, and more particularly to a mechanism for forming articles by applying pressure thereto.

6 An object of the present invention is to simplify and improve a mechanism for forming articles.

10 Another object is to selectively heat or cool a material receptacle by heating or cooling a member incorporated in a press for forming the material into an article.

15 Another object is to selectively heat or cool material in a mold while in a forming mechanism through a common means associated with the forming mechanism and having a surface shaped to embrace the non-planiform exterior surface of the mold.

20 An apparatus made in accordance with the invention may comprise a molding press, a mold for an article, and members designed to embrace the molds for heating or cooling them while in the press.

25 These and other features of the invention not specifically mentioned will appear from the following description and the accompanying drawings, in which

Fig. 1 shows a side elevation of a press incorporating the present invention,

30 Fig. 2 shows an enlarged section on the line 2—2 of Fig. 1, and

Fig. 3 is a view in perspective of an article formed by the machine.

Referring to the drawings in detail, a hydraulic press of a well known type may comprise the usual base, uprights, head, a ram and a cross head fastened to the ram and slidably mounted upon the uprights. The central part of the crosshead acts as a seat for channeled support members 18 and 40 two projections 19 from the crosshead may be used as tables upon which to prepare molds. Upon members 18 is affixed, by means of bolts 24 and clamps 26, a block 27 in which are interconnected passages 28 45 which serve to convey either a heating or a cooling medium throughout the block. The upper surface of this block is of a shape to conform to that of the lower portions 49 of molds as shown in Fig. 2. To the underside of the head of the press may be affixed, by means of bolts 33 and clamps 34, a second block 36 having passages therein similar to those of the lower block to provide for the introduction of either a heating or a cooling 50 medium, but the lower portion of this block

is of a shape to conform to that of the upper portions 51 of the molds.

Pipes 37 and 38, connected with the upper and lower blocks 36 and 27 respectively, serve to admit either a heating or a cooling 60 medium into the interconnected passages in each of these blocks, while other pipes 41 and 42 act as returns for the medium. It is necessary to provide sliding connections, as shown at 43, in the pipes which are connected to the movable block 27, to permit 65 the movement of this block when the press is operated. By providing a two way valve 75 associated with conduits 76 and 77 leading to sources of suitable heating and cooling media the blocks either may be heated 70 or cooled as desired.

Separable molds are employed in the illustrated embodiment of the invention, the lower portions 49 of which may ride in an 75 under-cut track 52, and this track may extend out on to the tables 19 to facilitate the insertion and withdrawal of the molds and to hold the lower portion of the mold to the table when the cover member 51 is being 80 removed. The molds may be of metal, and although those illustrated in the drawings are designed for the purpose of molding mouthpieces for telephone transmitters, such as that shown in Fig. 3, from a substance 85 such as a rubber or other moldable composition, it is to be understood that the scope of the invention is not limited to the manufacture of such articles. Members 54, which shape the interior of the article to be molded, 90 are secured to the upper portions of the molds by means of screws 53, these members having a vertical section of the shape shown in Fig. 2, and a circular horizontal 95 section. In the base member 49 are firmly secured annular members 56 and 57 which shape the exterior of the article and are made separately from the mold proper in order to facilitate the machining thereof. 100 Members 58 are also pressed firmly into place in holes drilled in the molds to serve as supports for the member 59 which forms the bottom of the article being molded. Keys 61 are secured to the mold at intervals 105 about the base of each die to form vacuum relieving nicks in the threaded portions of the mouthpieces to be molded. As shown in the drawing, a sheet metal ring 63 may also be placed in the mold, and when the molding composition forms about it this 110

ring is incorporated within the molded article and acts to support and strengthen it. Pins 64 are firmly set into the upper die as shown to form perforations in the article being molded, the perforations being for the purpose of facilitating the passage of sound waves through this member onto the diaphragm of the telephone transmitter with which it is to be used. The edges of the dies where they come together at 66 are beveled outwardly away from each other to form an overflow chamber for surplus molding material, which, during the molding operation, forms upon the molded article a surrounding ring of triangular cross section which will break neatly at the edge where it joins the mouthpiece, and thereby facilitate trimming, as it leaves no fin upon the article.

In operating the machine the lower portions of the molds are placed in the tracks 52 on table 19, the cover members 51 being removed, and the ram 16 lowered to open the press. A predetermined quantity of moldable material is placed in each compartment of the lower portion of the mold, the upper portion 51 is put into place and the molds are slipped into the press between the jacketed blocks 27 and 36. The lever 47 is now operated to introduce a medium under pressure into the cylinder 14 to raise the ram 16, which causes a relative movement of the molds between the blocks 27 and 36 to compress the moldable material therein. Valve 75 may now be operated to introduce steam or other medium of the required temperature from a source (not shown) through the conduit 76 into the passages 28 in the blocks 27 and 36 to heat them and the molds in contact therewith. After the interval required for treating the molding compound has elapsed, the valve 75 may be actuated, if desired, to disconnect the blocks 27 and 36 from the steam conduit 76 and connect them with the conduit 77, thus introducing a cooling medium, for instance, water from a source (not shown) into the passages of the blocks to cool the molded articles. After the required cooling interval, the lever 47 is operated, to exhaust the pressure medium from the cylinder 14 to lower the ram and open the press, and the molds withdrawn. Cover member 51 may then be removed and the molded articles lifted from the molds. After removing the threading dies and the surrounding ring formed by the material forced into the overflow chamber during molding and buffing the edge from which this ring was removed, the article is ready for use.

What is claimed is:

1. In a mechanism for forming articles, a combined heating and cooling means having a guideway, a receptacle for material and adapted to slidably engage the guide-

way, and means cooperating with the first-mentioned means to compress the material in the receptacle into an article.

2. In a mechanism for forming articles, a combined heating and cooling means having a guideway, a receptacle for material and adapted to slidably engage the guideway, a second means, and means for causing a relative movement of the first and second means to compress the material in the receptacle into an article.

3. In a mechanism for forming articles, a combined heating and cooling means having a guideway, a receptacle for material and adapted to slidably engage the guideway, and a hydraulic press carrying the means and operative to exert pressure on the material in the receptacle.

4. In a mechanism for forming articles, a combined heating and cooling means having a depression therein, a receptacle for material having an exterior conforming to the shape of the depression, means associated with the first-mentioned means to cause a relative movement of portions thereof to compress the material in the receptacle into an article, and means in said depression for permitting the movement of said receptacle.

5. In a mechanism for forming articles, a combined heating and cooling means having a plurality of guideways therein, a plurality of receptacles having depressions therein of the shape of the article to be formed and adapted to slidably engage the guideways, and means for causing a relative movement of portions of the first-mentioned means to compress the material in the receptacle into an article.

6. In a mechanism for forming articles, a plurality of molds for containing material, a combined heating and cooling means common to the molds and having depressions therein conforming to the exterior shape thereof, and means associated therewith to cause a movement thereof to form material in the molds into articles.

7. In a mechanism for forming articles, a plurality of molds, each having a plurality of formed cavities therein for material, combined heating and cooling means common to the molds and having cavities therein conforming to the shape thereof, and means associated with the first-mentioned means to cause a movement thereof to form the material in the cavities into articles.

8. In a mechanism for forming articles, a plurality of molds for containing material, combined heating and cooling means common to the molds and having cavities therein conforming to the exterior shape thereof, means associated therewith to cause a relative movement of portions thereof to form the material in the molds into articles, means for alternately supplying heating and cooling media to the first-mentioned means, and

guides located in said cavities to allow separation of said molds from said heating and cooling means.

9. In a mechanism for forming articles, 5 a plurality of molds, each having a plurality of formed cavities therein for containing material, combined heating and cooling means common to the molds and having cavities therein conforming to the exterior 10 shape of the molds, means associated therewith to cause a relative movement of por-

tions thereof to form the material in the molds into articles, means for selectively supplying the first-mentioned means with heating and cooling media, and guides located in said cavities along which said molds are moved horizontally. 15

In witness whereof, I hereunto subscribe my name this 15th day of August A. D., 1923.

GUSTAVE ADOLPH GROS.