

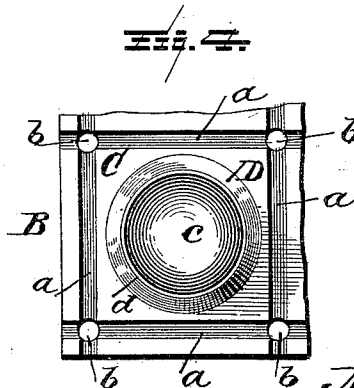
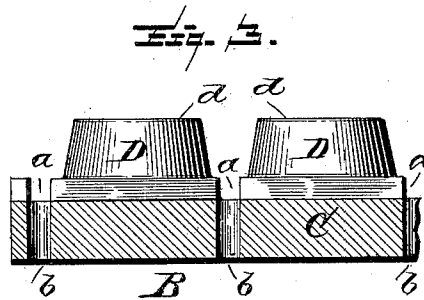
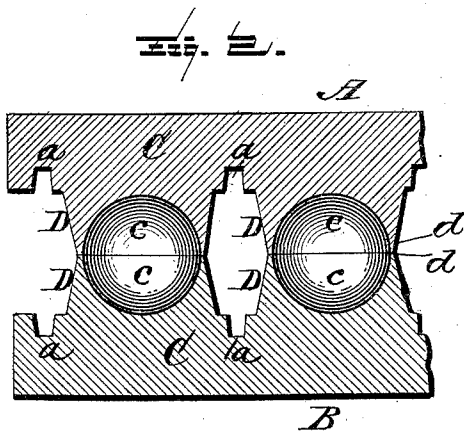
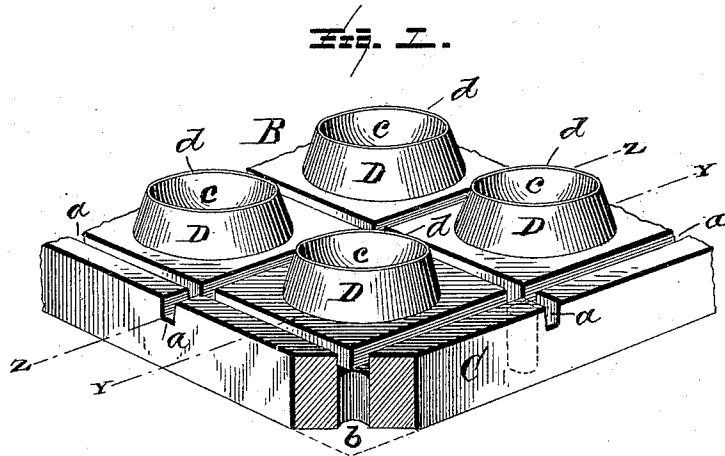
(No Model.)

M. LANG.

DIE FOR THE MANUFACTURE OF MARBLES.

No. 449,256.

Patented Mar. 31, 1891.



Witnesses

L. C. Mills.
Wm. B. Scott,

Inventor

Matthew Lang,
per Cha. H. Fowler
Attorney

UNITED STATES PATENT OFFICE.

MATTHEW LANG, OF AKRON, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, OF ONE-HALF TO THE EAST-END MARBLE COMPANY, OF SAME PLACE.

DIE FOR THE MANUFACTURE OF MARBLES.

SPECIFICATION forming part of Letters Patent No. 449,256, dated March 31, 1891.

Application filed August 23, 1890. Serial No. 362,821. (No model.)

To all whom it may concern:

Be it known that I, MATTHEW LANG, a citizen of the United States, residing at Akron, in the county of Summit and State of Ohio, have invented certain new and useful Improvements in Dies for the Manufacture of Marbles; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters of reference marked thereon.

Figure 1 of the drawings is a perspective view of one of the die-sections; Fig. 2, a vertical section taken on line *yy* of Fig. 1, showing the two die-sections together and in the position they would assume after the formation of the marble; Fig. 3, a sectional elevation taken on line *zz* of Fig. 1, and Fig. 4 a top plan view of a portion of the die-section.

The present invention has for its object to provide means for cutting and forming marbles from clay, whereby a large number can be produced at one and the same operation within a comparatively short space of time and with little trouble to the operator.

In order to carry out my invention, I provide two peculiarly-constructed die-sections, which are especially adapted for cutting and working the clay in its plastic state to form the spherical bodies constituting the marbles, such dies being substantially shown in the drawings, and hereinafter described and claimed.

In the accompanying drawings, A represents the upper die-section and B the lower die-section of substantially the same construction and formed of any suitable material found best adapted for the purpose.

The die-sections above described consist substantially of the base C and dies proper D, the sections having any number of these dies, whereby any number of marbles may be produced at one and the same operation. The base, as will be seen, has channels *a*, which extend out through the sides thereof and form issues for the escape of the surplus clay between the die-sections after the marbles are formed. The channels *a* are of sufficient depth to receive and conduct the clay therein

out through the sides of the die-sections, and any surplus clay not issuing therefrom is conducted out through vertical discharge-openings *b*. These discharge-openings extend vertically through the base of the die-sections and are located at the apex of the angle formed by the intersecting channels *a*, thus making ample provision for the ready discharge of any surplus clay that would otherwise pass out in sheets over the edges of the die-sections and necessitate the cleaning of the die-section after every operation.

The dies proper are shown at D, and the walls thereof extend beyond the plane of the base C, or, in other words, are disposed above it, and each of these dies has a semi-spherical molding-cavity *c*, which takes the shape of one-half the marble, and when the two dies are brought together form a complete sphere, the cavities being of a size in proportion to the size which the marble is to be.

The walls of the dies D may bevel or incline outward to increase their area of base, as shown, or they may be perpendicular or any other shape found most desirable, such change not affecting the essential features of the invention, and any change coming within ordinary mechanical judgment and skill I reserve the right to make without departing from the principle of my invention.

It is well known that clay in its plastic state is of a very adhesive character and offers considerable resistance, and will consequently follow a dull edge for a short distance before parting; but when a keen or sharp edge is applied the clay will part with little resistance. Knowing these facts, and in order to insure a smooth surface at the point where the two semi-spherical dies meet, I provide the dies D with a cutting-edge *d*, which cleanly severs the clay to form the marble from the sheet which is placed between the die-sections.

In practice it would be considered advantageous to have one or both of the die-sections provided with dowel-pins or any other well-known means whereby the two sections will be properly centered, so that the cutting-edges of the dies upon the two sections will come on a line directly opposite each other, and when brought together against the sheet of clay be-

tween them the cutting-edges of each pair of dies which form the complete sphere act in conjunction with each other to perfectly and cleanly sever the clay that is to form the marble from the sheet.

In operation the clay, in sheets or otherwise, is placed over the lower die-section, the sheet being considerably thicker than the proposed thickness or diameter of the marble, so that there will be a sufficient amount of stock to properly fill the spherical cavity of the two dies when brought together. The clay being now in position over the lower die-section and the upper die-section placed in position, so that the cutting-edges of each pair of dies will be directly opposite each other and on the same vertical plane and the clay in place between the die-sections, the die-sections are placed under pressure, and when this is accomplished the marbles will be formed in number corresponding to the number of dies, which are removed and the process repeated. The surplus clay, as before described, is forced through the issues and discharge-openings, and that remaining around the dies is left to be forced out in the next operation.

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

In a die for forming spherical bodies of plastic material, the combination of two opposite die-sections, each consisting of a base and a plurality of cutting-dies extending beyond the plane thereof, one or both of said sections having a series of horizontal channels upon the inner side of its base which pass between the dies and cross each other and extend out through the sides of the base to form issues for the plastic material around each die, and a series of vertical discharge-openings extending through the base and communicating with the channels at their point of juncture, substantially as and for the purpose set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

MATTHEW LANG.

Witnesses:

L. D. SEWARD,
JAMES GONG.