M. CARTY.

Dies for Molding Plastic Substances.

No. 200,986. Patented March 5, 1878.

Fig.1.

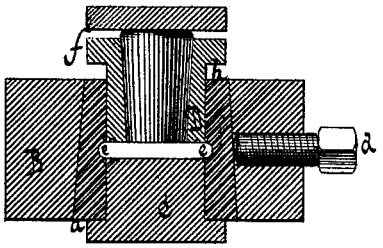


Fig.2.

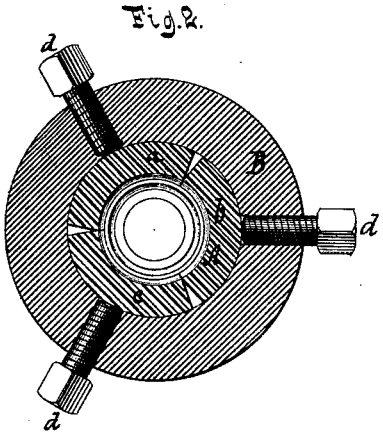
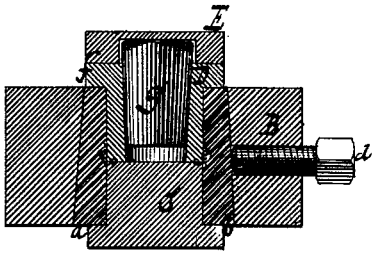


Fig.3.

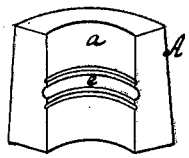


Witnesses.

W. Hauff

Chas. Wahlers.

Fig.4.



Inventor.

Martin Carty

UNITED STATES PATENT OFFICE.

MARTIN CARTY, OF NEWARK, NEW JERSEY.

IMPROVEMENT IN DIES FOR MOLDING PLASTIC SUBSTANCES.

Specification forming part of Letters Patent No. **200,986**, dated March 5, 1878; application filed July 25, 1877.

To all whom it may concern:

Be it known that I, MARTIN CARTY, of Newark, in the county of Essex and State of New Jersey, have invented a new and useful Improvement in Dies for Molding Plastic and other Materials, such as india-rubber, celluloid, and other like substances, which improvement is fully set forth in the following specification, reference being had to the accompanying drawing, in which—

Figure 1 represents a vertical central section. Fig. 2 is a horizontal section. Fig. 3 is a vertical section with the hollow cap which is used for relieving the center plug of the follower from pressure. Fig. 4 is a detached perspective view of one of the sections of the die.

Similar letters indicate corresponding parts.

This invention consists in a die of any number of sections most suitable to produce the desired effect or pattern, which are fitted into a suitable receiver, each of the sections being provided with a cavity, and being retained in position by a screw, so that when the several sections are secured in the receiver a continuous cavity is formed in the die corresponding to the article to be molded, and after the material for such article has been pressed into said cavity the die can be readily removed from the receiver, and by taking the same apart the finished article drops out of the cavity, and rings or other articles, with designs or figures in relief, can be readily formed. With this die is combined a follower containing a tapering center plug and a hollow cap, so that at the beginning of the pressing operation the material is forced into the cavity of the die, and then, by applying the hollow cap, the tapering center plug recedes and the surplus material passes into the body of the follower.

In the drawing, the letter A designates my die, which is composed of any suitable number of sections, *a b c*, which are fitted into the receiver B, and retained in position by screws *d*. In the interior of the die is formed a cavity, *e*, which corresponds in shape to the article to be molded, such, for instance, as a ring, which may be plain or ornamented by designs or characters of any desired form, such designs or characters being engraved into the interior surface of the cavity *e*. By making the die in sections, the labor of engraving such designs or characters is materially facilitated by exposing the surface to be engraved fully to the workman.

In the example shown in the drawing both the die and the receiver are circular; but they may be made in any other suitable form or shape.

With the die and the receiver are combined a plug, C, and a follower, D, which are adapted to meet at any given point most suitable to force the material into the cavity *e* of the pattern or die. After the plug C has been inserted, a quantity of the material to be pressed is placed into the die, the follower D is applied, and the whole is placed under a press. By applying pressure the material to be pressed is forced into the cavity *e;* but, in order to produce clean articles, it is requisite that the follower shall be depressed, so that its inner surface shall meet, as near as possible, the inner surface of the plug C, as shown in Fig. 3. The follower is provided with a head, *f*, by which it can be conveniently lifted out.

It is found, however, that in depressing the follower the surplus material is squeezed out between the head *f* and the surface of the die, and in this case the follower cannot be depressed to the desired point, and the articles have not the proper finish. This difficulty I have overcome by providing the follower D with a tapering plug, *g*. When this plug is in position, as shown in Fig. 1, its inner surface is flush with the inner surface of the follower, but its outer surface projects beyond the outer surface of the follower, and, when pressure is applied to the follower by means of a flat plate or platen, such pressure comes to bear on the outer end of the plug, and this plug is depressed together with the follower. After sufficient pressure has been applied to force the material into the cavity *e*, I place on the top of the follower a hollow cap, E, Fig. 3, and then I complete the operation of pressing by applying pressure on the cap. During this stage of the process the plug *g* recedes and the surplus material passes up into the cavity previously occupied by said plug, so so that the follower D can be depressed until its inner surface comes in contact with the surface of the plug C.

After the pressing operation has been completed, the plug C and the follower D are taken out, the die is removed from the receiver, and by taking said die apart the pressed article is caused to drop out of the cavity *e* without any danger of injuring its shape or the designs or characters with which the same may be ornamented.

My die can be used for pressing plastic materials of various description, and also metallic alloys or other materials.

The same receiver and die can be used by giving to the sections of said die a radial motion, so that they can be compressed against a blank placed on a center-pin. Each section of the die, in this case, is guided by a pin radiating from the center-pin, and the screws *d* complete the pressure. This device, however, forms the subject-matter of a separate application.

What I claim as new, and desire to secure by Letters Patent, is—

1. A die composed of any suitable number of sections fitted into a suitable receiver, each of the sections being provided with a cavity and being retained in position by a screw, in combination with a plug, C, and a follower, D, all constructed and adapted to operate substantially as herein shown and described.

2. The combination, with the follower D, die A, and receiver B, of a tapering plug, *g*, and a hollow cap, E, substantially as and for the purpose set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 24th day of July, 1877.

MARTIN CARTY.

Witnesses:
W. HAUFF,
CHAS. WAHLERS.