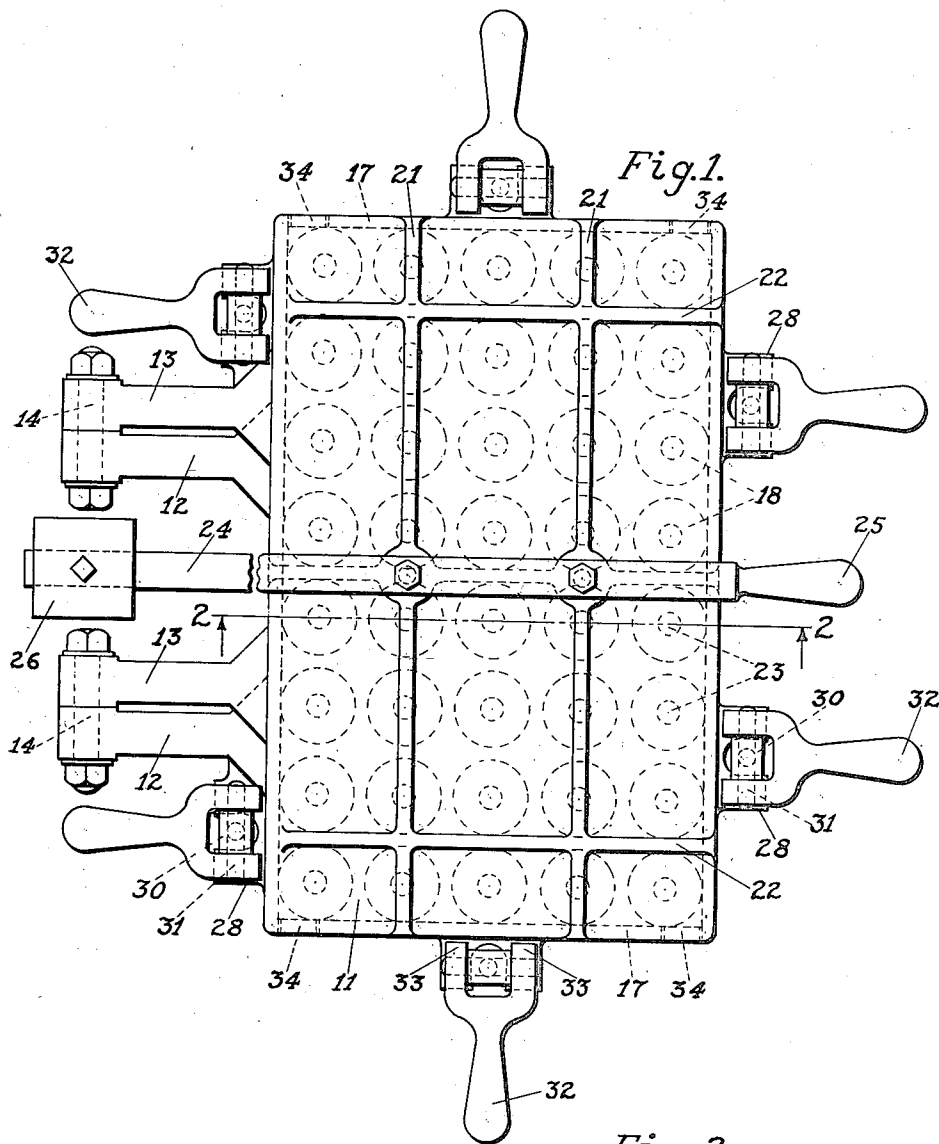
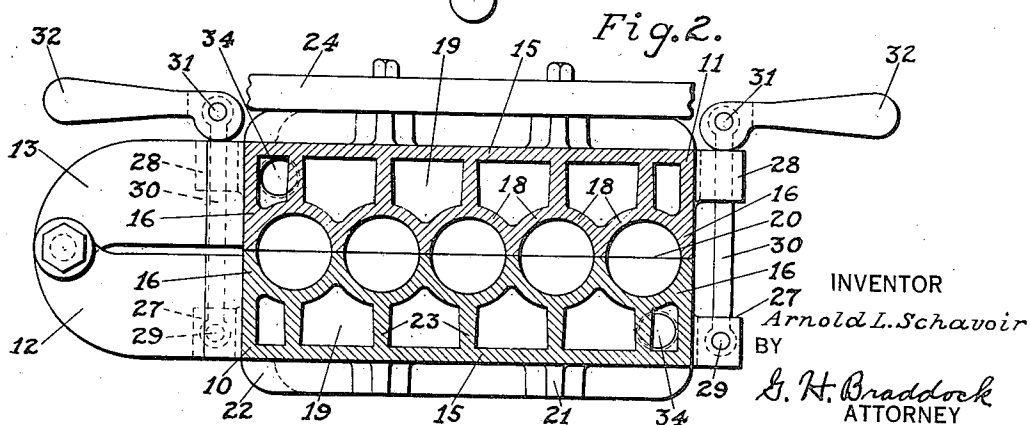


A. L. SCHAVOIR.  
COMBINATION MOLD.  
APPLICATION FILED APR. 28, 1921.

1,407,682.

Patented Feb. 21, 1922.



# UNITED STATES PATENT OFFICE.

ARNOLD L. SCHAVOIR, OF STAMFORD, CONNECTICUT.

## COMBINATION MOLD.

1,407,682.

Specification of Letters Patent. Patented Feb. 21, 1922.

Application filed April 28, 1921. Serial No. 465,338.

*To all whom it may concern:*

Be it known that ARNOLD L. SCHAVOIR, a citizen of the United States, and resident of Stamford, in the county of Fairfield and State of Connecticut, has invented certain new and useful Improvements in Combination Molds, of which the following is a specification.

This invention relates to a combination mold especially useful for the purpose of manufacturing in quantity rubber or celluloid articles, such as balls, dolls, and the like.

The principal object of the invention is to provide an improved mold of the present character which will be of simple, economical and durable construction, will be light in weight so that it can be easily and conveniently manipulated in use, and will be capable of efficiently and quickly performing the function for which intended, as more fully hereinafter to appear.

Other important objects and advantages will become apparent as the description proceeds.

In the accompanying drawing forming a part of this specification,

Fig. 1 is a top plan view of the novel combination mold; and

Fig. 2 is a sectional view thereof on line 2-2 in Fig. 1 and looking in the direction of the arrows.

By reference to the drawing, it will be seen that the combination mold consists of a lower section 10 and an upper section 11 which may be approximate duplicates of each other. The sections are hingedly connected to each other in any preferred manner, as by means of arms, denoted by 12 and 13, respectively, extending rearwardly from the sections and pivoted upon pins 14, as will be understood.

Each section consists of a casting of suitable material, such as iron or steel, having a base 15, side and end walls, denoted by 16 and 17, respectively, and a base arranged opposite base 15 and constituting a series of half-molds 18 of any preferred configuration, depending upon the shape of the article to be formed, said base, half-molds, side and end walls providing a completely enclosed chamber 19 in close proximity to the half-molds and partly surrounding the same.

In the case of each section, base 15 and the extremities of the half-molds, denoted by 20, are parallel with each other, all of

said extremities terminating in the same plane, as is obvious.

To strengthen bases 15, without adding considerably to their weight, they are each preferably provided with longitudinally and laterally extending ribs, denoted by 21 and 22, respectively, and to insure the positions of the half-molds, preferably cylindrical supports 23 are incorporated in the castings, said supports extending through chamber 19 and having their opposite ends, respectively, terminating in base 15 and the half-molds.

Mechanism is provided for swinging the upper mold section on its hinge and toward and from the lower mold section. As shown, this mechanism consists of a bar 24 secured to base 15 of the upper section and having thereon a handle 25 arranged at the front of the combination mold and a weight 26 arranged at the rear thereof, said weight being for the obvious purpose of counterbalancing a part of the weight of the upper section.

It is to be here remarked that arms 12 and 13 and pins 14 are so arranged that when the upper and lower sections are moved toward each other, as they are shown in the drawing, the extremities 20 of the half-molds of the different sections firmly and evenly engage each other to supply complete and independent molds, best shown in Fig. 2, each consisting of two half-molds. The sections can be locked together in any preferred manner. As shown, I provide a series of clamps for this purpose and locate the same at spaced apart positions about the lower and upper sections, each clamp preferably consisting of a pair of aligning U-shaped lugs, denoted by 27 and 28, respectively, one extending from the lower and one from the upper section, a cross-pin 29 imbedded in the legs of lug 27, a link 30 pivotally supported at its lower end upon cross-pin 29 and extending between the legs of lug 28, a cross-pin 31 upon which the upper end of the link is pivoted, and a lever 32 having cam faced arms 33 pivoted upon cross-pin 31 and adapted to bear against the upper faces of the legs of U-shaped lug 28. It will be apparent that to unlock the sections in order that they can be moved apart, all that is necessary is to first swing the levers 32 upwardly from the positions in which shown in the drawing to release the cam faced arms from lugs 28, and to

then swing the links 30 on the cross-pins 29 and away from the combination mold. To lock the sections the operations just described are reversed.

5 As very clearly disclosed, the chamber of each mold section is provided with an inlet and an outlet opening, said openings being designated 34, whereby hot and cold fluids, such as steam and cold water or cold air can  
10 at different times be introduced into said chambers.

The mold performs its work in the manner now to be set forth. While the upper section is in open position, a piece of material of desirable shape and proper consistency is placed in each of the half-molds of the lower section. The upper section is then moved against the lower section by means of the handle 25 and locked by means of the clamps. Steam under the desired pressure is now introduced into both of the chambers 19. The steam partially encloses the half-molds, as will be evident, and supplies heat to the material. After the steam  
25 has properly done its work as just described, the chambers are emptied of steam, and cold water or cold air is then inserted to cool off the half-molds and cause the formed articles to set. At the end of the setting  
30 operation the clamps are released and the upper section is moved to open position in order that the articles can be lifted from the half-molds of the lower section.

In the manufacture of hollow articles the piece of material placed in each half-mold has in its interior some suitable substance which at ordinary temperatures is non-gaseous but at higher temperatures is gaseous. As soon as steam is introduced in the manner already set forth, the substance  
40 at the interior of each piece of material almost immediately becomes gaseous and causes the material to expand to fill the complete molds, thus forming hollow articles  
45 of the shape of said molds.

In accordance with common practice the working faces of the half-molds may consist of relatively soft metal capable of being more accurately formed to give better  
50 results.

It is especially called to attention that the combination mold of this invention is comparatively light in weight, and that the upper section thereof can be moved to open

and closed position with but a minimum of effort. The material of the half-molds may, in the construction shown and described, be of comparatively thin metal and the steam and cold water or cold air in the chambers can to a considerable extent surround the half-molds, thus making the interior of the complete molds quite sensitive to changes of temperature in the chambers. The mold of the invention, therefore, is adequately capable of efficiently and quickly functioning to produce the result desired in manufacturing articles composed of rubber, celluloid or other materials which can be put into molds in a plastic state.

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

1. A combination mold comprising a pair of sections each consisting of a casting having side and end walls and a pair of bases, one of said bases of each section constituting a series of half-molds, said bases, side and end walls of each section enclosing a chamber partially surrounding said half-molds, and said chambers having openings  
80 to receive hot and cold fluids.

2. A combination mold comprising a pair of hinged connected sections each consisting of a casting having side and end walls and a pair of bases, one of said bases of each section constituting a series of half-molds having extremities lying in the same plane, and said castings each enclosing a chamber partially surrounding said half-molds and adapted to receive hot and cold fluids, means  
90 for moving said sections together so that the extremities of the half-molds of the different sections can engage each other to form complete molds, and means for locking said sections to each other.

3. In a combination mold of the character described, a mold section consisting of a casting, said casting having side and end walls and a pair of bases one of which constitutes a series of half-molds, and said walls and bases defining a completely enclosed chamber partially surrounding said half-molds, and supports for said half-molds and extending through said chamber.

Signed at Stamford, in the county of Fairfield, and State of Connecticut, this 22nd day of April, A. D. 1921.

ARNOLD L. SCHAVOIR.