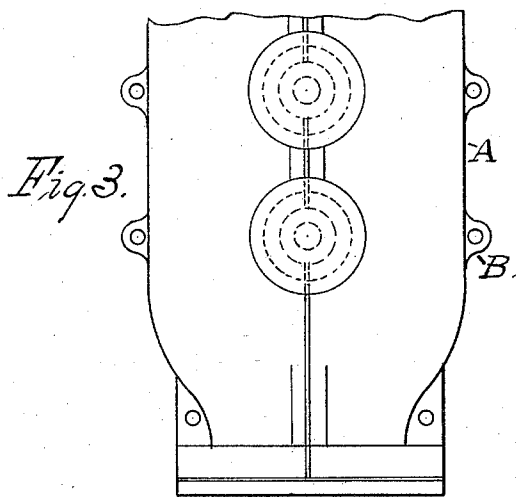
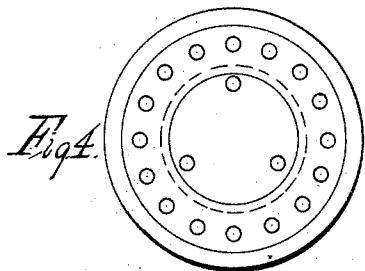
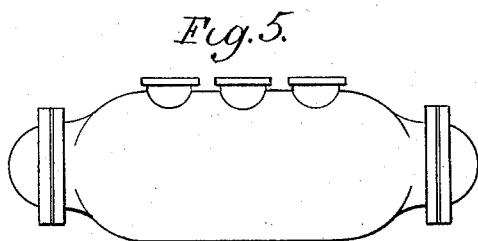


(No Model.)

E. ALLEN.
MOLD FOR CASTING ACID EGGS.

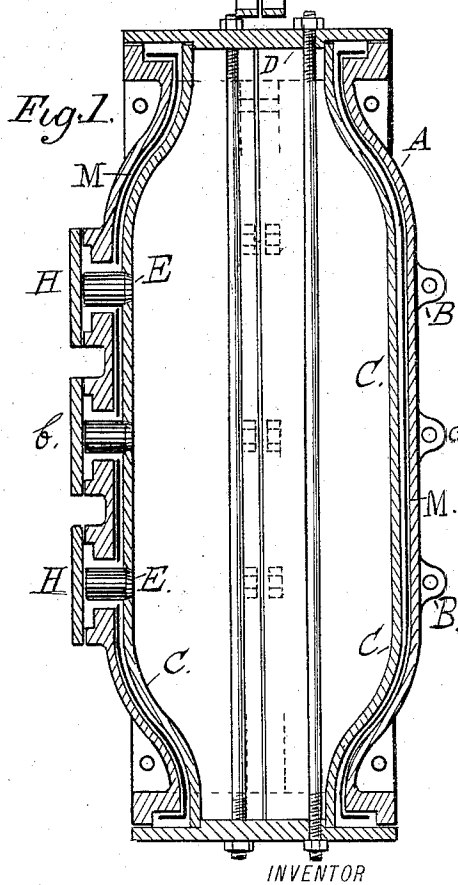
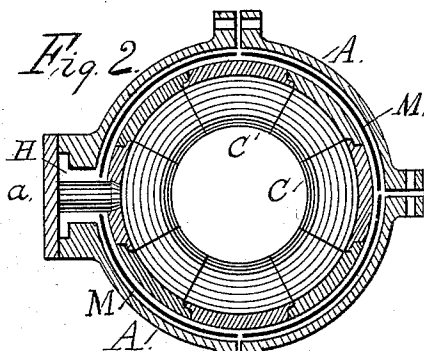
No. 468,610.

Patented Feb. 9, 1892.



WITNESSES:

J. Ashten Ramsay
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INVENTOR

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UNITED STATES PATENT OFFICE.

EDWARD ALLEN, OF BALTIMORE, MARYLAND.

MOLD FOR CASTING ACID-EGGS.

SPECIFICATION forming part of Letters Patent No. 468,610, dated February 9, 1892.

Application filed May 4, 1891. Serial No. 391,595. (No model.)

To all whom it may concern:

Be it known that I, EDWARD ALLEN, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented a new and useful Mold or Matrix for Casting Acid-Eggs, in combination with corrugated sheets of sheet iron and lead, of which the following is a specification.

This invention relates mainly to improvements in molding and casting from molten lead, in combination with sheets of corrugated iron or other metal, certain peculiar vessels known as "acid-eggs" and used in the lead-chemical trade for the purpose of holding sulphuric acid and providing a receptacle for its temporary retention while being forced against a pressure into vessels or otherwise.

In making the acid-eggs aforesaid it has been the custom to make them of cast-iron of great thickness; also, in some cases to line the castings with sheet-lead; also, to cast them of molten lead of different forms into molds and to make them of riveted sheet-iron lined with sheet-lead.

The mode or system of molding, casting, and constructing acid-eggs and the means and mechanisms or apparatus employed therein involving my invention consists as follows: The mold to give shape to the egg and provide a receptacle for the fluid metal while cooling and taking its shape is composed of inner and outer walls of cast-iron and so arranged that the several parts composing the walls of the mold are readily and securely fitted together as one casting and can as readily be separated and taken apart in order to withdraw the casting after it has been poured, and as sheets of sheet corrugated iron are cast in the walls of the egg the latter is given a certain amount of stiffness and elasticity, enabling the walls to hold their shape and possess strength to resist inside and outside pressures, which they could not do unless reinforced by the aforesaid sheet-iron, owing to the great ductility and inelasticity of lead.

The objection to casting the eggs of cast-iron is owing to the corrosive effect of the acid on its inner surfaces, and when any one spot is corroded through the whole apparatus has

to be thrown away, and even when lined with lead, an expensive mode of construction, the acid in time works its way between the lining and attacks the iron.

Now from the above the superiority of my invention will be shown over the foregoing methods of constructing acid-eggs.

Having thus generally specified the nature and effects of the invention, I will now proceed to describe it with reference to the accompanying drawings, which illustrate examples of apparatus according to the invention and show means for carrying the invention into practical effect, such means at the same time constituting examples of apparatus constructed and adapted to operate according to the invention.

Figure 1 is a horizontal section of the mold cut through *a b*, Fig. 2. Fig. 2 is a transverse section of the mold cut through *c c*, Fig. 1. Fig. 3 is an outside plan view looking down on the apparatus with the nozzle turned up and the mold closed. Fig. 4 is an inside view of the end flanges or disks for covering the ends of the molds, showing the positions of the covers for the holes in the flanges of the apparatus when cast. Fig. 5 is an outside view of the egg when the convex covers cast in another mold are in place.

With reference to the drawings it will be seen that the outer shell or cope of the mold consists of four pieces *A*, held together by bolts at *B*, and the inner wall *C* consists of eight sections let into each other with rabbeted joints, as shown, and are held in their proper positions—that is, concentric to the outer wall, leaving the proper space to receive the molten metal—by an inwardly-projecting disk forming part of the end heads *D*. These heads being confined in place by the longitudinal wrought-iron rods, tapered holes are bored in the inner wall of the mold at *E* to receive the metal plugs *C*, forming the inner walls of the nozzles *H*. Sheet-iron segments, four in number, about one-fourth of an inch thick, are placed in the spaces to be occupied by the lead. (Shown at *M*.) These segments are punched with a tapered punch with small holes at many convenient points in a way to

raise deep burrs projecting from the face of the metal. These burrs bear against the outer wall of the mold, and the distance is thus regulated between the sheet-iron and outer wall.

The mold is shown in Fig. 1 closed up ready to receive the fluid metal. The wrought-iron segments having been first placed in position, as shown at N, the fluid metal is directed into the mold by an ordinary gate introduced at the bottom and allowed quietly to fill the mold and rise above the nozzles (these projections being cast upward) into proper sinking heads for feeding and carrying off the dross. As is seen, the fluid metal will be cast around and completely encompass the wrought-iron segments, so that they will afford the requisite strength and stiffness without exposing their surfaces to the action of the acid. As soon as the lead in the mold has set or become sufficiently cold, the nuts on the bolts are slacked up, the heads of the molds removed, and the inner segments of the wall allowed to collapse and are withdrawn through the end openings and the outer wall stripped by simply removing the lug-bolts. Should any of the iron burrs referred to project through the outer wall of the egg casting, lead would be burned over them to prevent oxidation.

Acid-eggs as now constructed are rendered useless in a very short time and are consequently expensive, and it has been my object in the invention herein described to produce these vessels at a reduced cost.

Having now particularly described and ascertained the nature of this invention and in what manner the same is to be performed, I would state that in setting out the nature of the invention, showing certain special arrangement of parts, I wish it to be understood, however, that although these forms, modes, and arrangements illustrated may be used with advantage, yet I do not intend to limit my patent to these special things, as it may be carried out in many ways and in connection with different forms of acid-eggs and iron reinforcing-segments to be cast in the lead metal without departing from its spirit and scope, and that it is susceptible of many modi-

fications and can be varied to suit the various conditions of application; and

I declare that what I claim in respect to the herein-described invention is—

1. The method of casting acid-holding eggs, which consists in supporting a hard-metal shell placed in sections and fusible at a higher temperature than lead between the inner and outer walls of a metal flask and pouring a softer metal about the same, thereby embedding it within the acid-proof material, as set forth.

2. A metal mold or flask for casting acid-holding eggs, consisting of inner and outer sectional walls, the inner wall or core being collapsible, end plates which register with the ends thereof, and clamping rods or irons which engage such end plates and hold the mold-sections in place, as set forth.

3. A mold for casting acid-holding eggs, consisting of an inner shell cut into longitudinal sections with rabbeted joints, permitting the parts to collapse, and the end disks or covers closing the ends of the molds, which also by their inward disk projections (turned at a reduced diameter corresponding with the interior wall) hold the core-sections in place and close the rabbet-joints, in combination with an outer wall or cope of the flask, also formed in sections and secured by bolts passing through lugs, substantially as shown and described.

4. The new and improved method of casting a compound-metal vessel for receiving sulphuric or other acids, consisting of the placing of sheets of iron, steel, or other stiff elastic metals within the space of a mold prepared to receive molten metal at equal distances from the inner and outer flask-walls and corrugated or burred, said burrs or corrugations serving to properly regulate the sheet metal, and pouring molten lead or other soft metal into the mold and filling all the unoccupied portions of the same, thus embedding the iron, steel, or other metal used within walls of lead, as shown.

EDWARD ALLEN.

Witnesses:

FELIX R. SULLIVAN,
H. H. STRYKER.