S. ROGERS.
Chill-Mold.

No. 207,552. Patented Aug. 27, 1878.

Fig. 1.

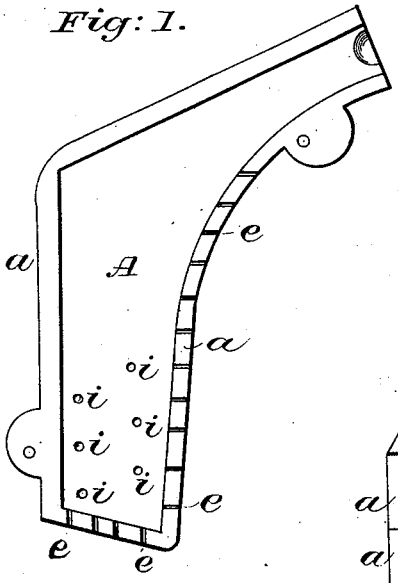


Fig. 3.

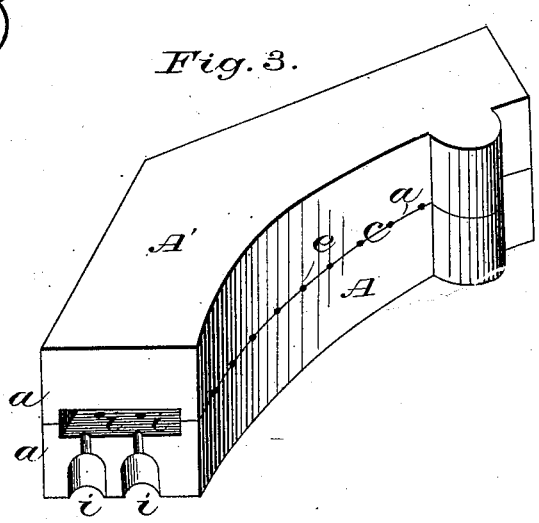
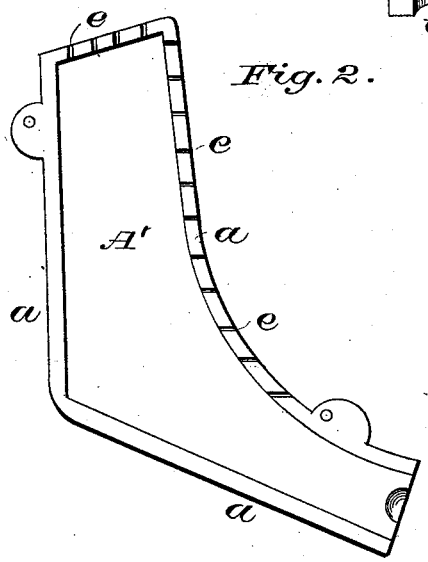


Fig. 2.



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UNITED STATES PATENT OFFICE.

SEYMOUR ROGERS, OF ALLEGHENY, PENNSYLVANIA.

IMPROVEMENT IN CHILL-MOLDS.

Specification forming part of Letters Patent No. **207,552**, dated August 27, 1878; application filed March 14, 1878.

To all whom it may concern:

Be it known that I, SEYMOUR ROGERS, of Allegheny, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Molds for Casting Metal; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing, forming part of this specification, in which—

Figures 1 and 2 represent the detached sections of a mold embodying my invention; and Fig. 3 is a sectional view of the mold, the point of section being indicated by dotted line, Fig. 1.

Like letters refer to like parts wherever they occur.

My invention relates to the construction of metal molds for casting metal, and is especially adapted to the construction of cast-iron molds for casting steel castings of irregular form.

Heretofore much difficulty has been experienced in obtaining perfect castings in metal molds, and many methods and constructions have been adopted.

In the ordinary cast-iron mold the difficulty experienced is the inability to obtain, especially in their castings, perfection in their exterior surface and outline and solidity and compactness in their constituency—a difficulty arising from an insufficient elimination of gases from the molten steel and want of proper ventilation of the mold, whereby said gases and air could have ready and free escape therefrom. Where vents are used with the usual breadth of bearings, either from the chilling of the metal, the clogging of the vents in smoking the mold, or from some other cause, the free and full flow of the metal into the finer details of the mold is prevented in a measure, and scalloped or defective castings are frequently obtained, the result of this deficiency being the production of a casting more or less imperfect, and in case of thin castings the edges will be very imperfect, irregular, incomplete in outline, not infrequently imperfect in their exterior surface, "honey-combed" to a greater or less degree throughout the whole interior body, and otherwise open and porous in texture, rendering them unmerchantable and worthless as castings. There will also be obtained castings sound externally or on the surface, while the interior will be found honey-combed, and the labor expended in grinding or polishing them up will develop their utter worthlessness for use. So invariably have these been the results that as a business the methods heretofore employed for producing articles of trade and commerce have proved uncertain and unprofitable, neither meeting the requirements of the age nor demands of the trade.

The object of my invention is, therefore, to produce a metallic mold wherein metal castings, especially steel castings, can be produced in a uniform, reliable, perfect, economic, and profitable manner.

To this end my invention consists in so reducing or constructing the "bearings" of mold-sections as that when the same are put together for use they shall in their "part," or joint, effect ventilation of the mold, whereby is afforded a ready escape for the gases, which thus having a sufficiently unobstructed vent are eliminated from the molten steel, which results in permitting a full and free flow of the steel into every detail of the mold, and before the absorption of heat by the mold has had the effect to so chill the molten steel as to materially interrupt the elimination of the gases or the flow of the steel, thereby producing castings perfect in all their parts, outline, and exterior surface, and solid and compact in texture, and homogeneous throughout.

Hereinafter in the use of the term "part" I desire to be understood as meaning the junction of the sections, or where the mold-sections separate or part.

I will now proceed to describe my invention, so that others skilled in the art to which it appertains may apply the same.

I have chosen, to illustrate my invention and for the purposes of this description, a cast-iron mold for casting steel plow-points, as presenting a common form of irregular casting, though I do not desire or expect to be limited thereby.

In the drawing, A A represent the two halves of such a mold, each section provided with a flange, *a*, extending around the edge thereof. Heretofore these flanges or bearing-surfaces have been fitted together by planing,

filing, or other means well known in the art, so as to form tight joints. For my purpose I make them only sufficiently close or tight to retain the molten steel without interrupting the free escape of the air and gases from the mold while the steel is being poured or is still in a molten state. This I accomplish as follows: By reducing the bearing-surfaces of the flanges, as at *c*, in width to the smallest possible dimension consistent with the necessary retaining-strength of the mold at these points, preferably one-thirty-second of an inch, so that the edge thereof will present somewhat the appearance of a knife-edge, and which, although fitted so closely as to retain the molten steel, yet practically allows vent for gas and air, which vent is further rendered effective and the ventilation facilitated and accomplished by the opening up of the natural serrations in these edges or surfaces under the sudden and ready expansion of the bearings consequent upon contact with the molten steel. But in case broader bearings—say, from one-fourth to three-eighths of an inch—are necessary, as in very heavy castings, or from any reason are deemed preferable, then I so dress the same in fitting up across the faces of the bearings, either by cross-filing or milling, as that they shall present slightly-serrated surfaces, which, when brought together for use, shall fit and operate and be in effect the same as above described in the narrow-edge bearing, the artificial serrations facilitating the ventilation, as described, in either construction the result being invariably perfect castings, as hereinbefore described. I have not found it necessary that both sections of the mold should be thus prepared or made, and I do not wish or expect to be so limited, as in many instances one section thus made would be sufficient.

Molds constructed as described will be employed in the usual manner when casting metals.

The advantages incident to my invention are the simplicity, reliability, and permanency of the devices, whereby uniform and perfect results are obtained without recourse to outside appliances, such as cores and sand-packings.

I am aware that it is not new to provide chill-molds with a number of small air-openings leading from the interior space to the outside for the purpose of making vent for the air contained in the space when the molten metal is poured in, and do not claim such subject-matter in conjunction with the ordinary or broad bearing.

I am also aware that vent-notches across the bearing-edges of the parts of a mold are not new, and distinctly disclaim the same.

Having thus set forth the nature and advantages of my invention, what I claim, and desire to secure by Letters Patent, is—

1. A sectional metallic mold having its bearings reduced or thinned at the part where the venting of the mold is effected, substantially as and for the purpose specified.

2. A sectional metallic mold having its bearings reduced or thinned at the part and serrated by cross-filing, substantially as and for the purpose specified.

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