

(No Model.)

R. G. COLLINS.  
DUMPING MOLD.

No. 466,888.

Patented Jan. 12, 1892.

Fig. 2.

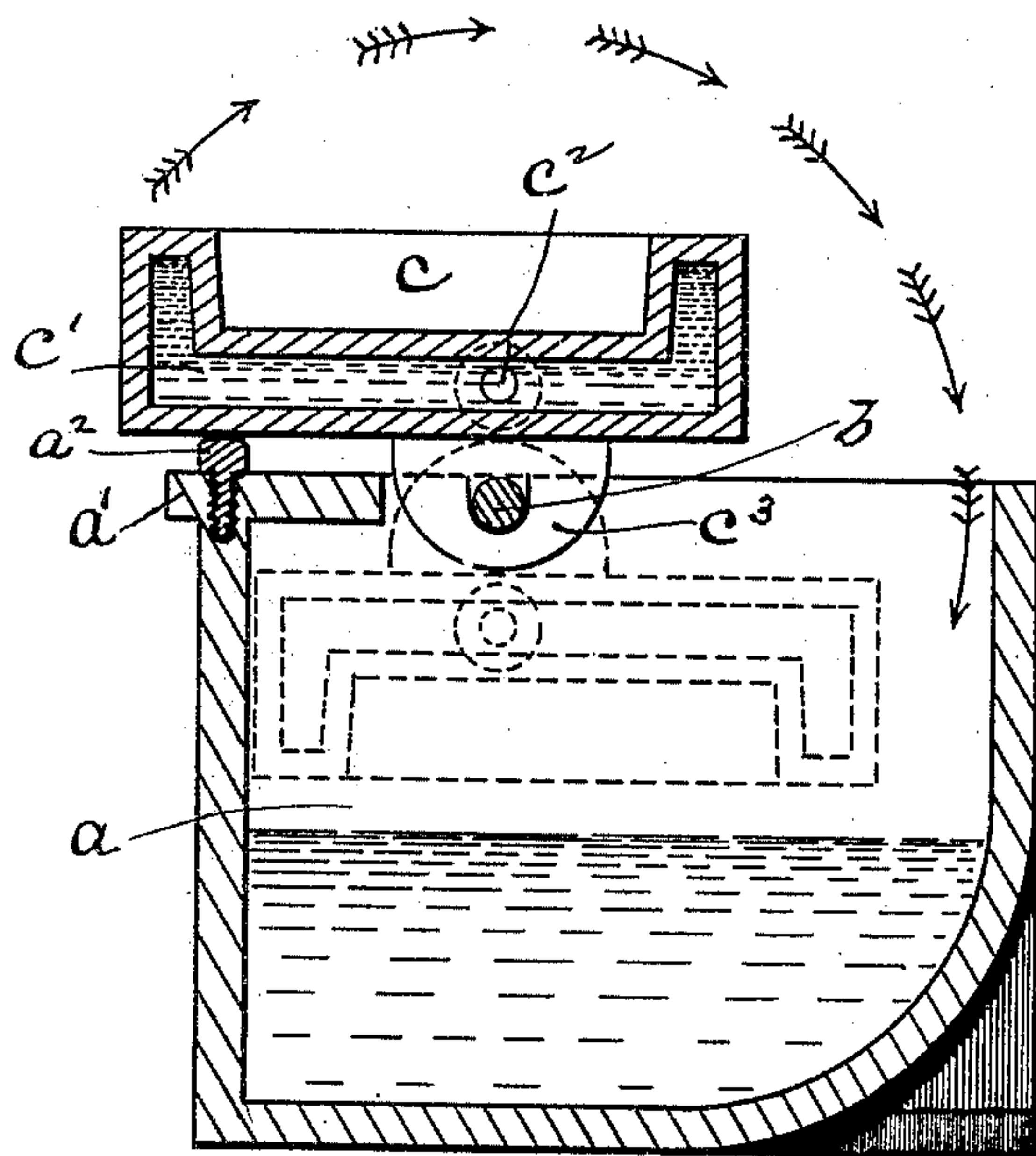
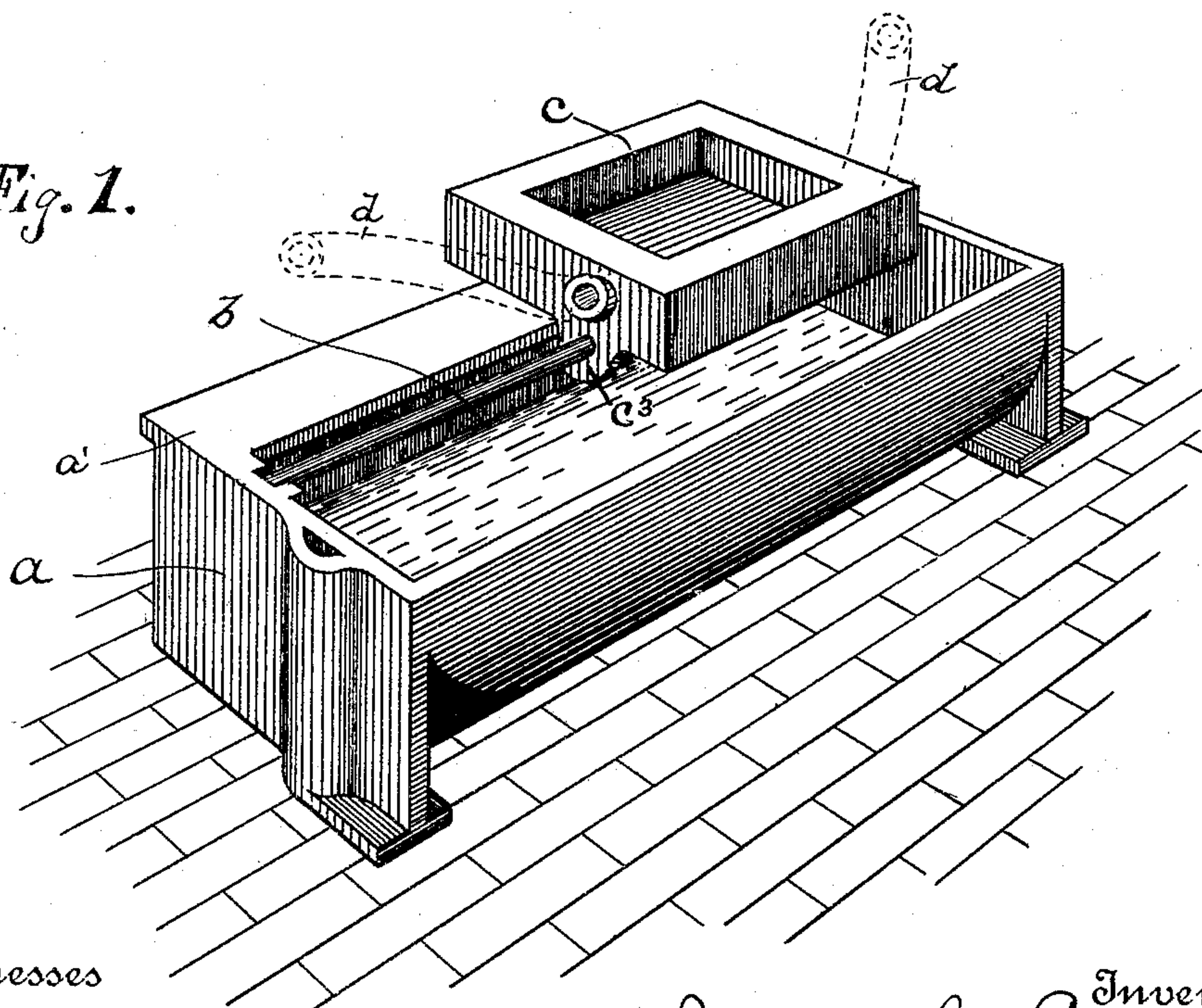


Fig. 1.



Witnesses

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Allen Terry.

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# UNITED STATES PATENT OFFICE.

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## DUMPING-MOLD.

SPECIFICATION forming part of Letters Patent No. 466,888, dated January 12, 1892.

Application filed November 20, 1890. Serial No. 372,099. (No model.)

*To all whom it may concern:*

Be it known that I, REUBEN G. COLLINS, a citizen of the United States, residing at Dollar Bay, in the county of Houghton and State of Michigan, have invented a certain new and useful Improvement in Dumping-Molds, which improvement is fully set forth and described in the following specification, reference being had to the accompanying sheet of drawings.

This invention relates to molds for casting metal—as, for example, in casting copper ingots or cakes in smelting-works—and has for its object the production of a mold by means of which the processes of pouring and cooling may be expedited and a more satisfactory casting or cake obtained than has been possible heretofore.

It has been a common, if not universal, practice heretofore in smelting-works to provide a two-part cup-mold, usually of rectangular form and split diagonally from corner to corner, to allow the casting to be more readily removed after cooling. The process of running a copper ignot in such a mold is briefly stated as follows: Enough molten metal is poured on the bottom of the mold to cover it and is allowed to cool. Then sufficient metal is poured onto this thin copper bottom to make a “cake” of the desired weight and allowed to stand undisturbed until cool, when another layer or cake of metal is poured, and so on until the mold is filled and cooled, when said mold is separated at the diagonal parting above referred to and the cakes split apart and trimmed. This splitting apart of the cakes causes considerable work, as they are stuck together tightly, and as each cake shrinks after it is poured it allows the metal of the next upper cake to flow down around it, rendering the operation of separating and trimming more difficult. Dumping cake-molds have been tried, but without success, for the reason that the sudden cooling and consequent shrinking (by immersion in water) broke the molds. Such molds to work successfully must provide and maintain a cool surface upon which the molten metal is poured; otherwise the sudden cooling of the iron mold, either by pouring on of water or by immersion, results, as above stated, in the breaking of said mold.

My present invention seeks to provide a cake-mold that may be kept cool during the period of pouring and which may be conveniently inverted to dump and cool the cake of metal so soon as it “sets” or begins to cool.

The annexed drawings illustrate my invention, Figure 1 being a perspective view of a dumping-mold of my preferred form, and Fig. 2 a cross-section of the same somewhat enlarged.

In the drawings the letter *a* denotes a tank made, preferably, of cast-iron, having seated in suitable bearings at each end a rod *b*, on which is journaled my dumping-mold, the latter being formed as a rectangular box *c*, with hollow side and bottom walls, providing a chamber *c'*, in which water, oil, or any other desired cooling-fluid may be maintained. Suitable inlet and outlet openings *c''* are provided to receive flexible pipes or hose *d*, by means of which a constant current of cooling-fluid may be passed through the chamber *c'*, thus providing a water-jacket beneath and around the mold proper. When the molten metal is poured into such a mold, the bottom of the cake is quickly cooled instead of heating the bottom of the mold, as would be the case if said mold were not water-jacketed, and as soon as the metal sets the mold is inverted on rod *b*, as indicated by dotted lines in Fig. 2, and the partly-cooled cake drops into the water-tank *a*. The mold is then returned to its upright position and is again ready for the next pouring. Meanwhile a current of cold water or other fluid has been passing through pipes *d* and chamber *c'* to prevent the sudden heating or cooling of said mold. Cakes produced in this way have the great advantage of avoiding all the labor of splitting and trimming, also the extra trouble of pouring a “bottom” in the mold, as described, which is done simply to obtain a better surface to pour on, these bottoms being returned to the furnace daily and resmelted. The cakes produced in my water-jacket mold are also much better to handle, as they have none of the sharp edges left from chisel cuts common to cakes as now produced. There is also a marked decrease in the heated air in which the operatives are obliged to work, as by the old methods they were in the midst of molds containing red-hot metal, while under my new



method the metal may be dumped into water and cooled almost as soon as poured.

The manner of supporting the dumping-mold should be noted. The hinge-lugs  $c^3$  on 5 said mold are located on one side of the center of gravity, thus providing an excess of weight at the side that rests on the side wall  $a'$  of tank  $a$  or upon one or more screws  $a^2$ , as shown, and so serves to support the mold 10 in its upright position until the metal is poured and partly cooled. When the mold is inverted to dump the cake, it engages and is checked by said wall  $a'$ , and it will thus be seen that whether in its upright or inverted 15 position the mold is held horizontal, in one position being upright and free to receive the molten matter and in the other position is free to drop the partly-cooled cake into the water of tank  $a$ . The rod  $b$  is supported in open 20 bearings, so that it and the connected mold may be readily removed, if desired.

Having described my invention, I claim—

1. In combination with a tank having a rod across its top, a dumping-mold movably 25 mounted upon the rod, said mold being formed as a rectangular box with hollow sides and bottom walls forming a chamber within which liquids may be circulated and provided with an inlet and an outlet adapted for the connection with the mold of flexible piping, 30 and being also provided with perforated ears which extend below the bottom and engage with the rod, substantially as described.

2. In combination with a tank, a dumping-mold pivotally secured thereto, and an ad- 35 justing-screw in the top of the tank for supporting and leveling the mold, substantially as described.

REUBEN G. COLLINS.

Witnesses:

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W. P. HARLOW.