Nov. 22, 1927. 1,650,260

DE FOREST W. CANDLER

MOLD COOLING MEANS

Filed Dec. 19, 1923 2 Sheets-Sheet 1

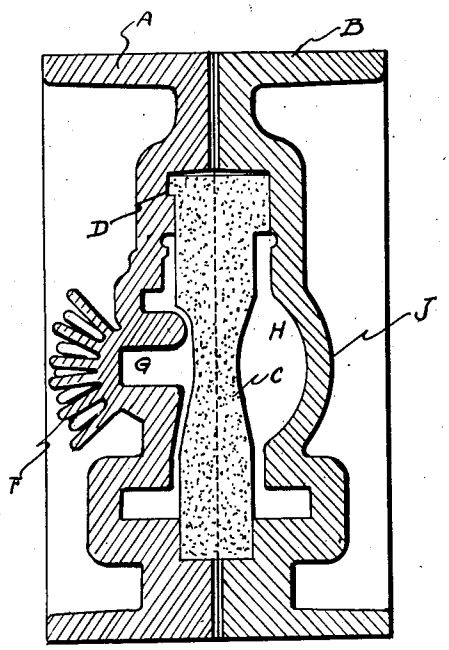


Fig. 1

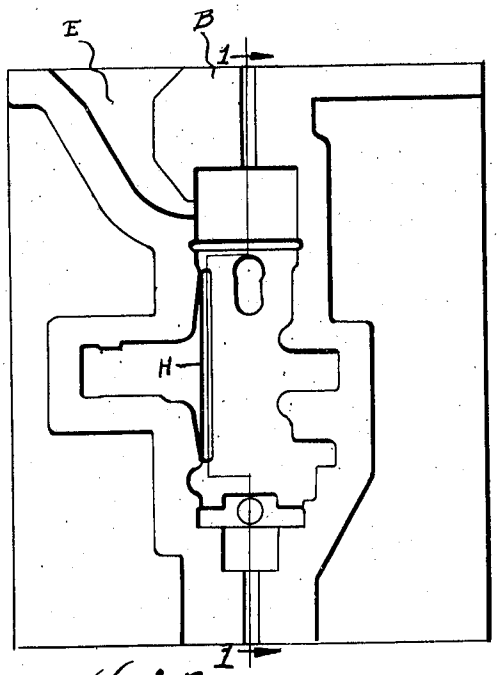


Fig. 2

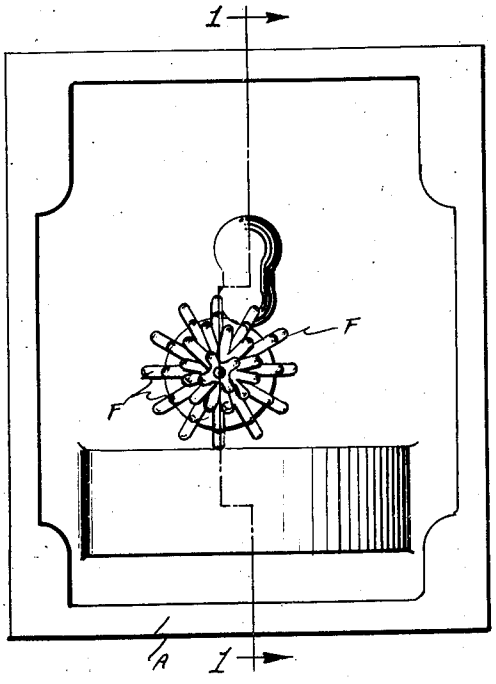


Fig. 3

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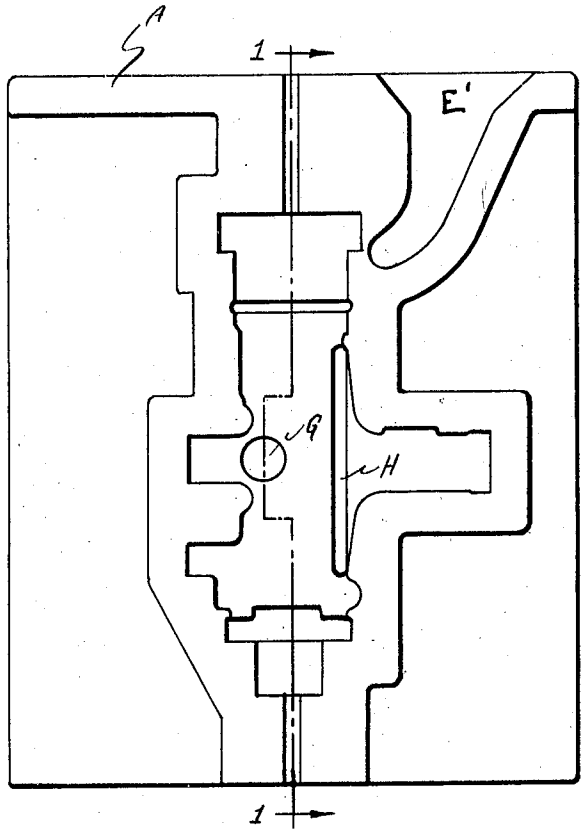


Fig. 4

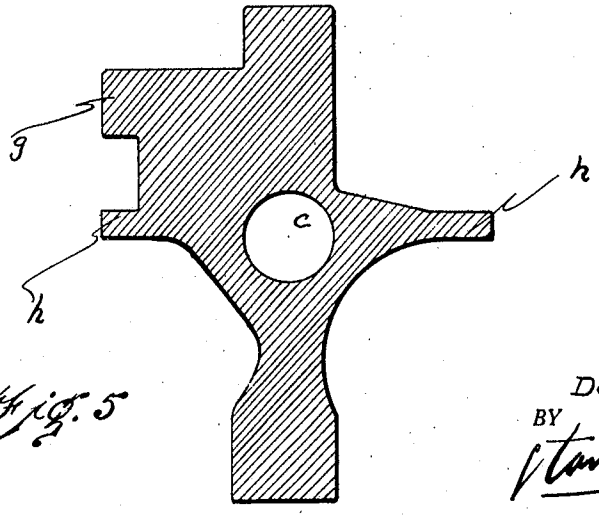


Fig. 5

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UNITED STATES PATENT OFFICE

DE FOREST W. CANDLER, OF DETROIT, MICHIGAN, ASSIGNOR TO EARL HOLLEY, OF DETROIT, MICHIGAN.

MOLD-COOLING MEANS.

Application filed December 19, 1923. Serial No. 681,457.

This invention relates to a metal mold adapted for the production of unsymmetrical castings. It is specifically adapted to the production of cast iron carbureters of the horizontal type.

The object of this invention is to compensate for the unequal heating of the various parts of the mold due to the fact that such a casting has massive parts and parts relatively less massive. Obviously the massive parts tend to overheat the mold and the relatively less massive parts tend to be chilled by the mold producing a casting which is hard in the parts of the casting which are less massive, and soft in the parts of the casting which are massive.

It follows, therefore, that the uniform heating of the mold and the unifrom cooling of the castings cast therein is beneficial alike to the casting produced and to the mold in which the casting is produced.

Figure 1 shows a cross sectional elevation of two corresponding molds, showing the core in position. This figure is taken on the planes 1—1 of Figures 2, 3, and 4.

Figure 2 shows in elevation the right hand mold of Figure 1, with the core removed.

Figure 3 shows in elevation the back view of the left hand mold, showing the heat dissipating means for producing uniform cooling of the mold.

Figure 4 shows in elevation the left hand mold of Figure 1, with the core removed.

Figure 5 shows a cross sectional elevation of the casting cast in the mold.

In Figures 1, 2, 3, and 4, A and B are the left hand and right hand molds respectively, the mold A being shown in Figures 3 and 4 and the mold B being shown in Figure 2. The molds enclose a dry sand core C, which is supported and locked in place by means of the projection D. Each mold is provided with a sprue E and E′, shown in Figures 2 and 4, and arranged to discharge against the upper portion of the core C, as described in my co-pending application, Serial No. 544,114, allowed July 27th, 1923, filed March 16, 1922.

In Figure 3 the back of mold A is shown with a plurality of cooling fins F. The purpose of these fins will be described below.

In Figure 5 a section through the casting cast therein is shown. It will be noticed that this casting has a relatively thin flange *h* and a relatively massive section terminating in the boss *g*. In Figures 1, 2, and 4, H represents the depression corresponding to the flange *h*. G represents the depression corresponding to the boss *g* of the casting.

Now it is obvious that if castings be poured repeatedly in this mold that portion of the mold in which the boss *g* is cast, namely the depression G, will very quickly become overheated. That portion J of the mold B, opposite the flange depression H, will remain relatively cool and the flange *h* will tend to be chilled and contain small particles of white iron containing combined carbon, which are difficult to machine without previously subjecting the casting to prolonged annealing.

By the provision of the fins F that portion of the mold G which receives the boss *g* of the casting is maintained relatively cool, as these fins dissipate the heat by radiation and by convection. It is obvious that a cooling blast of air may be directed against the back of these molds and that portion of the mold which is provided with fins will be cooled and that portion of the mold which is not provided with fins will not be cooled so much, so that lack of symmetry of the mold will not produce unequal heating of the mold, which of course results in unequal chilling of the casting.

What I claim is:

An air cooled metal mold adapted for castings having variable sections, comprising a wall of substantially uniform thickness, means for heat dissipation consisting of radiation elements located in heat conducting relationship to the cavities in the mold in which the relatively massive sections of the casting are cast, whereby the heat dissipating surface is increased at such places and the relative rate of cooling of the entire casting is made more substantially uniform.

In testimony whereof I affix my signature.

DE FOREST W. CANDLER.