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PATENTED AUG. 11, 1903.

R. G. G. MOLDENKE.

PROCESS OF PRODUCING UNIFORMITY OF QUALITY IN MOLTEN METAL.

APPLICATION FILED JULY 10, 1900.

NO MODEL.

Fig. 2

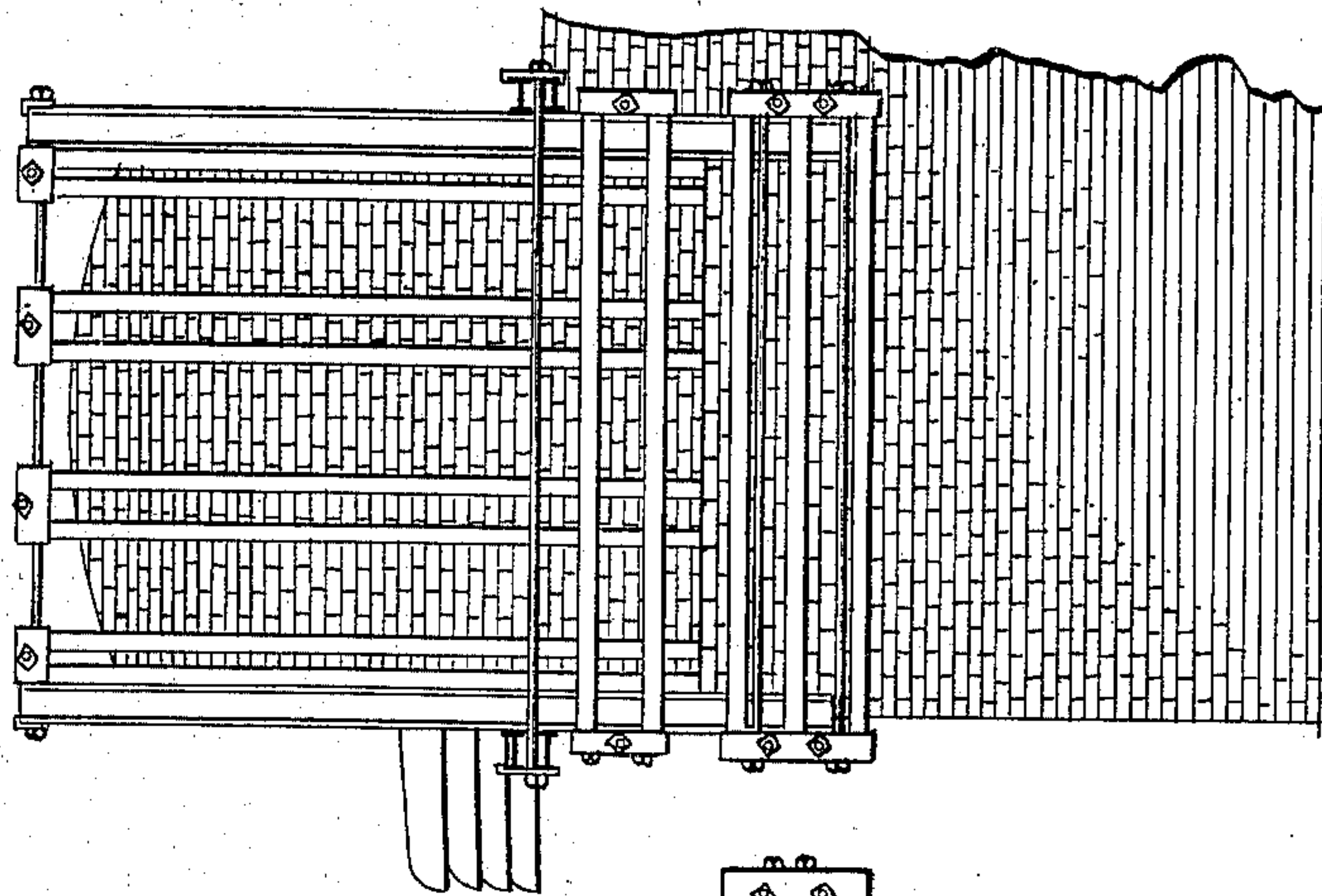
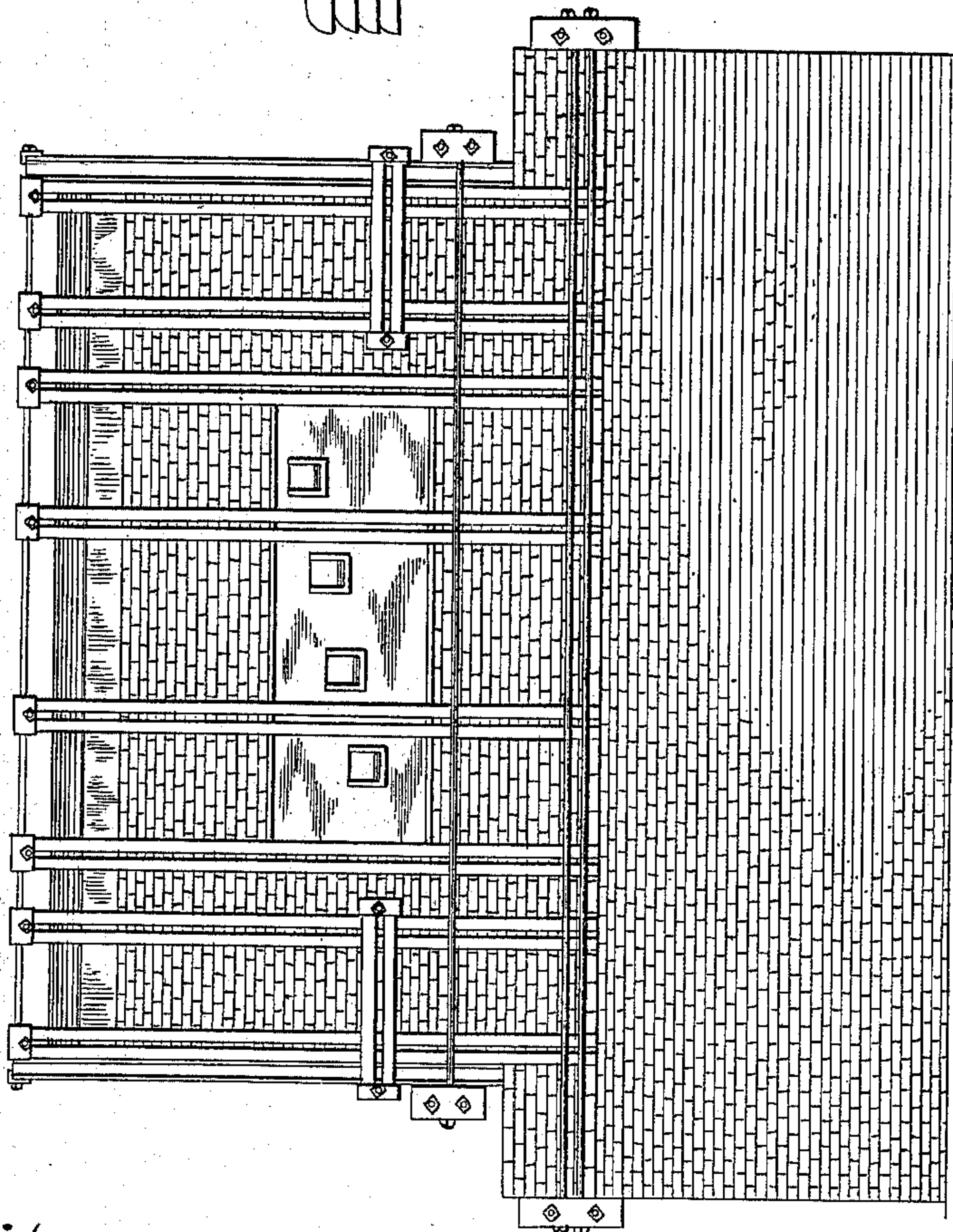


Fig. 1



Witnesses:

*C. Williams*  
*James C. Herron.*

*Inventor:*  
*Richard G. G. Moldenke*  
*By* *John H. Roney*  
*his*  
*Attorney.*



# UNITED STATES PATENT OFFICE.

RICHARD G. G. MOLDENKE, OF PITTSBURG, PENNSYLVANIA.

PROCESS OF PRODUCING UNIFORMITY OF QUALITY IN MOLTEN METAL.

SPECIFICATION forming part of Letters Patent No. 736,131, dated August 11, 1903.

Application filed July 10, 1900. Serial No. 23,069. (No specimens.)

*To all whom it may concern:*

Be it known that I, RICHARD G. G. MOLDENKE, a citizen of the United States, residing at Pittsburg, in the county of Allegheny, State of Pennsylvania, have invented or discovered a certain new and useful Improvement in Processes of Producing Uniformity of Quality in Molten Metal, of which improvement the following is a description.

My invention relates to processes for producing uniformity of quality in molten metal, cast-steel, and malleable-iron castings.

Heretofore, so far as I am aware, it has been impossible to attain uniformity of quality in metal in any given heat or melt, as when tapped or poured from or near the bottom of the furnace, as at present practiced, metal widely differing in quality is withdrawn at each pour or tapping, making it impossible to utilize the entire melt in castings of required uniform quality. To illustrate: Suppose we draw from a heat of malleable iron with a composition of .75 silicon from or near the bottom, where the temperature of the metal is lower than that at a higher level or plane, and cast the metal so drawn in a casting of two-inch-square section. We find that the metal is of the quality known as a "gray" iron. If, however, at the same instant we tap the furnace slightly below the plane of the molten metal, where the temperature of the metal is considerably higher than at the bottom, and cast the metal drawn therefrom into a casting of the same size as in the preceding instance mentioned, we find that the metal is of a quality known as a "white" iron. In the metal drawn from the bottom we also find that the carbon of the composition has separated in the form of graphite, whereas in the metal drawn from the top the carbon remains combined. Under the present method of melting and pouring the metal we thus unavoidably obtain metal of varying and different quality.

The object of my invention is to obviate this difficulty and produce uniformity of quality in molten metal, cast-steel, and malleable-iron castings, and to this end my invention consists in the following method of treating the metal and pouring the same.

Figure 1 is a front elevation of a furnace

which can be used in connection with my process, and Fig. 2 an end view of the furnace.

I charge a furnace of any usual construction in the usual manner to produce when melted metal of any required composition. After the metal at a higher level or plane has been brought to the proper temperature, and by test, the required quality I tap the furnace at a point below the plane of the molten metal sufficient to withdraw metal of the required quality. After the metal has been withdrawn to such point the pouring is discontinued and the heating continued until the metal then at the top of the furnace has attained the temperature and quality of that previously withdrawn. The furnace is then tapped a distance below the level or plane of the metal corresponding to the first and the metal withdrawn, as in the previous instance, and these steps continued until the entire heat has been withdrawn from the furnace. I have discovered by actual practice that this method of treating and pouring the metal insures practically perfect uniformity of quality.

What I claim, and desire to secure by Letters Patent, is—

The herein-described process for producing uniformity of quality in malleable iron or cast-steel which consists in bringing the metal at the top of the furnace to a desirable temperature and quality, then tapping the same a short distance below the plane of the metal and pouring therefrom until the metal varies in temperature and quality from that required, then suspending the pouring a short time until the metal at the top, which is at a lower level than before, again attains the temperature and quality previously secured, then tapping the metal below the plane thereof, a short distance below the point of the previous tapping, and pouring therefrom, and these steps continued until the heat or molten metal has been withdrawn.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

RICHARD G. G. MOLDENKE.

In presence of—

CLARENCE A. WILLIAMS,  
JOHN H. RONEY.