(No Model.) 2 Sheets—Sheet 1.

T. THOMAS.

CORE PRINT AND GATE PATTERN.

No. 368,311. Patented Aug. 16, 1887.

Fig. 1,

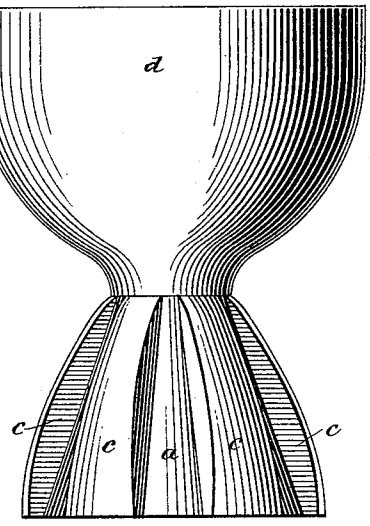


Fig. 2,

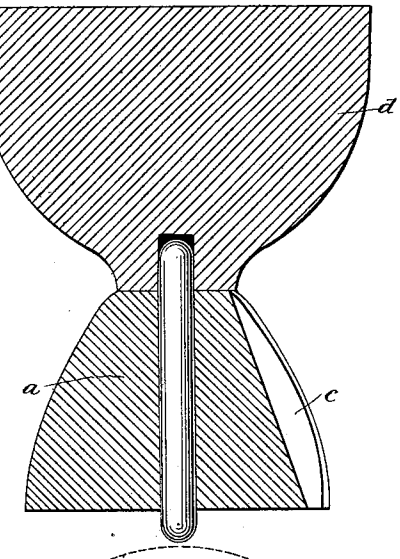
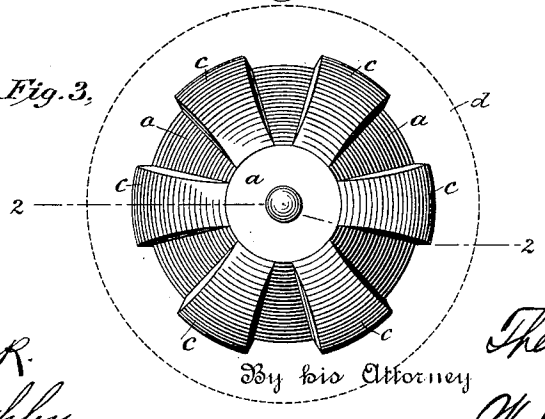


Fig. 3,



Witnesses

Geo. W. Breck.

Carrie E. Ashley

Inventor

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W. C. Witter.

(No Model.) 2 Sheets—Sheet 2.

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Fig. 4.

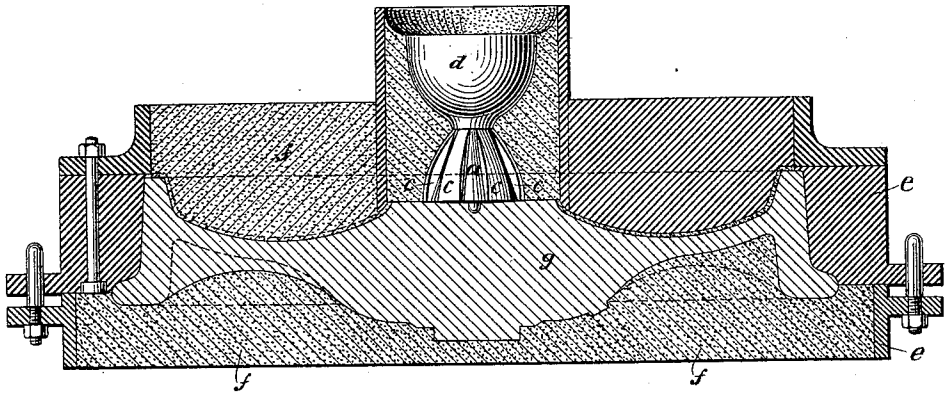


Fig. 5.

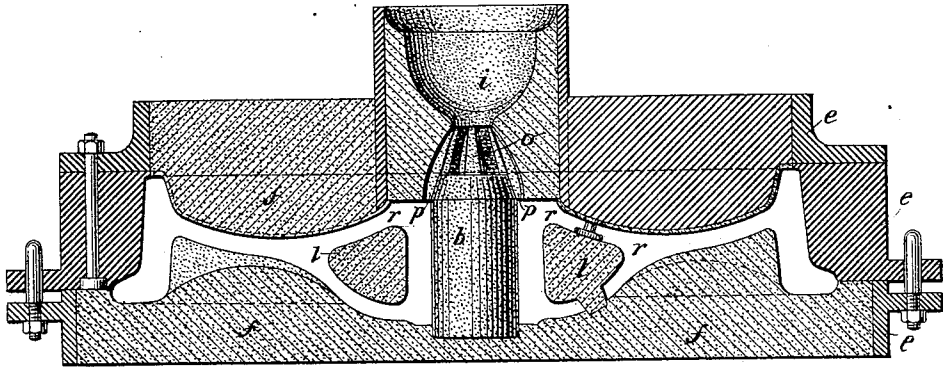
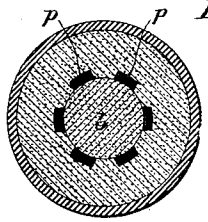


Fig. 6



Witnesses

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UNITED STATES PATENT OFFICE.

THEODORE THOMAS, OF NEW YORK, N. Y.

CORE-PRINT AND GATE-PATTERN.

SPECIFICATION forming part of Letters Patent No. 368,311, dated August 16, 1887.

Application filed May 18, 1887. Serial No. 238,635. (No model.)

To all whom it may concern:

Be it known that I, THEODORE THOMAS, a citizen of the United States, residing in New York city, in the county and State of New York, have invented a certain new and useful Improvement in Core-Prints and Gate-Patterns for Use in Making Car-Wheels; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings and the letters and figures of reference marked thereon, which form a part of this specification.

The invention is designed to secure solid front hubs in car-wheels by preventing the formation of air and shrinkage holes at the base of the gates or feeders, where they join the casting; and it consists of the devices hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a side elevation of my improved core-print and gate-pattern. Fig. 2 is a vertical section of the same. Fig. 3 is a top or plan view of the same. Fig. 4 is a longitudinal vertical section of a car-wheel mold, showing my improved pattern in its position upon the car-wheel pattern with the sand packed around it. Fig. 5 is a similar vertical section of the mold after the pattern has been removed and the mold is ready for pouring the metal. Fig. 6 is a sectional plan view of a portion of Fig. 5.

My improved pattern is constructed as shown in Figs. 1, 2, and 3.

a is the body or central portion of the pattern, the bottom surface of which is made circular in form and of the same diameter as the core *b*.

c c are the arms of the pattern, which form the gates or feeders in the mold. I have shown six of these arms in the drawings, and I prefer to have that number, though this number may be increased or diminished without departing from my invention.

d is a pattern connected with the core-print pattern by means of a dowel-pin. This part *d* forms the upper basin in the mold, and can be greatly varied in form, as it constitutes no part of my invention, but merely serves to give a convenient access to the lower basin of the mold.

My improved pattern is employed in the manner indicated in Fig. 4. In that figure, *e e* are the castings that constitute the flask, and *f* is the sand of the mold. *g* is the car-wheel pattern. All these parts are constructed in the usual manner, and form no part of the present invention. After the sand has been packed or rammed upon the rear side of the car-wheel pattern the flask is reversed and the core-print and gate-pattern and the pattern *d* are placed in position upon the car-wheel pattern and the sand is packed around the same, filling up the cope side of the flask, as shown in Fig. 4. Then the pattern *d*, whatever may be its shape, is removed, and thus the upper basin, *i*, is formed in the sand. The upper and lower halves of the mold are then separated and the car-wheel pattern *g* and the core-print and gate-pattern *a c* are removed. The two parts of the mold are again fastened together after the insertion of the cores *b* and *l*, and a hollow mold of the form shown in Fig. 5 results. This mold has an upper basin and a secondary basin, *o*. This secondary basin is immediately over the core, and has the gates or feeders *p p*, connecting with the cavity *r*, into which the metal is to be introduced to form the wheel. These gates *p p* are made of any desired size. They are formed in the green sand and the mold, with one side resting against that part of the core *b* which projects above the face of the casting.

The metal is poured into the upper basin, *i*, passes into the secondary basin *o*, and then flows from this basin *o* into the cavity *r*. The flow of the metal upon the top of and around the core *b* and the metal as it rises in the mold heats the core *b* up to a white heat. As the metal in the gates *p p* and the secondary basin *o* is in contact with this core *b*, the metal in the gates and the basin is kept in a condition of fluidity by the heat of the core *b*, and, being in this fluid or plastic condition, will follow up and permit the settling or shrinking of the casting and supply enough additional metal to prevent the formation of shrinkage-holes in the casting at its point of contact with the gates, and will also permit the escape of air and prevent the formation of air-holes at the same place. When the gates are passed through the green sand and are not brought in contact with the core, as in my invention, the metal in the gates is apt to become cold

and hard before the metal in the casting, and in case of the shrinkage of the metal in the casting or the presence of air in it, holes are formed in the casting at the base of the gates. My invention avoids these difficulties.

Again, by my invention a secondary basin of fluid metal is formed directly over the head of the central core, which is of such a size and is so protected from the air that it remains in a fluid condition for a sufficient length of time to insure an ample supply of fluid metal to the gates. By thus maintaining the metal in the gates and the basin above them in a fluid condition any air in the casting near the gates is enabled to rise into and through them, and thus free itself from the casting.

Another advantage resulting from my improved core-print and gate-pattern is that the metal is introduced into the mold quietly and evenly through a number of small gates. The metal, after running through the basin *i*, strikes the top of the core, and in this way the force of its fall is broken before it passes into the gates to enter the mold. This also tends to prevent the formation of shrinkage or air holes in the casting. In my invention, also, the metal is distributed or fed into the mold more uniformly, which helps to produce a more perfect wheel.

In making certain forms of wheels the core *l* is not needed; but my invention is equally applicable whether the core *l* is used or not.

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

1. A gate-pattern for use in casting car-wheels, having one or more arms adapted to form gates or feeders leading to the face of the casting down the side of that part of the central core which projects above the face of the casting, substantially as and for the purposes set forth.

2. A combined core-print and gate-pattern for use in casting car-wheels, consisting of the body part *a* and the arms *c c*, adapted to form a basin above the central core, and gates leading therefrom to the face of the casting down the side of the central core, substantially as and for the purposes set forth.

3. A combined core-print and gate-pattern for use in casting car-wheels, consisting of the body part *a*, the arms *c*, and the pattern *d*, adapted to form an upper basin, a secondary basin above the central core, and gates connecting the secondary basin with the casting, all substantially as and for the purposes set forth.

THEODORE THOMAS.

Witnesses:
ROBERT N. KENYON,
EDWIN SEGER.