J. K. SAX.

Mold for Casting Car-Wheels.

No. 197,228. Patented Nov. 20, 1877.

Fig. 1

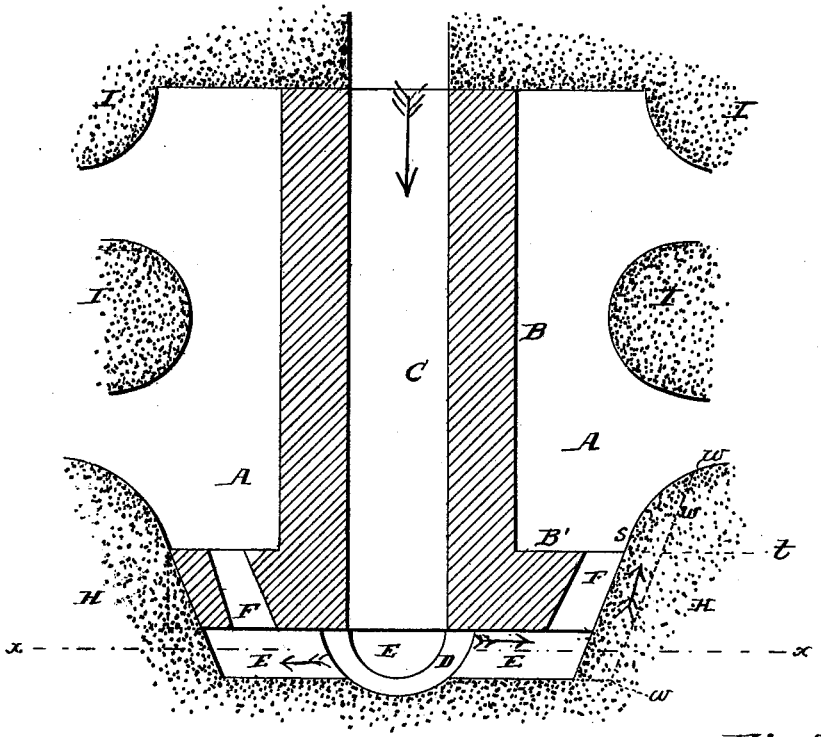


Fig. 2.

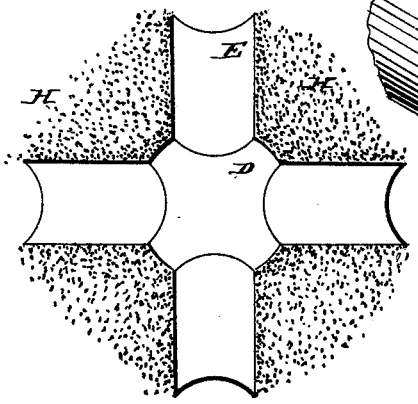
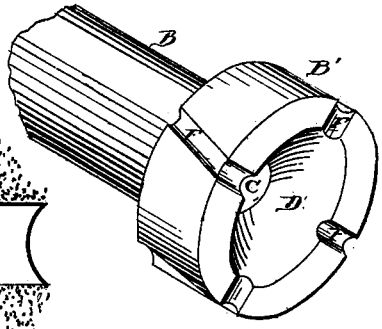


Fig. 3.



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JOHN K. SAX, OF PITTSTON, PENNSYLVANIA.

IMPROVEMENT IN MOLDS FOR CASTING CAR-WHEELS.

Specification forming part of Letters Patent No. **197,228**, dated November 20, 1877; application filed August 8, 1877.

To all whom it may concern:

Be it known that I, J. K. SAX, of Pittston, Luzerne county, and State of Pennsylvania, have invented Improvements in the Manufacture of Cast Wheels, of which the following is a specification:

My invention has for its object to facilitate the casting of wheels, pulleys, &c., and produce articles homogeneous in structure and free from flaws; and these objects I effect by the use of a core having an enlargement, with openings for introducing the metal into the mold from below, at or near the portion forming the hub, preferably in such a manner as to impart a circular motion to the entering current, and to the body of metal in the mold.

In the accompanying drawing, Figure 1 is a section, showing sufficient of a mold to illustrate my invention. Fig. 2 is an inverted plan view through the line *x x*, Fig. 1; and Fig. 3 is a modification.

H I represent the sand within the mold, molded in the usual manner, so as to leave space for the metal which is to form the car or other wheel or pulley, the lower hub portion H, however, being extended downward beyond the usual bottom line *t* of the face of the hub, the said extended portion having inclined sides *s*, as shown.

The tubular center core B has at the lower end a flange or enlargement, B′, the inclined edge of which is adapted to the inclined sides *s*. The said flange, however, may be straight at the edge, and adapted to a corresponding recess in the mold, as shown in dotted lines.

At or below the lower end of the enlargement B′ are formed a central enlarged basin, D, communicating with the central sprue C of the core, and radiating channels or conduits E, which communicate each with a conduit, F, forming a connection between the basin D and the hub-space A.

The conduits F may be inclined or vertical, and the inclination may be such as to impart to the metal flowing through them into the mold a whirling or rotatory motion. The said conduits also may be located at the outer edge of the enlargement, or beyond said edge in the sand, as shown in dotted lines *w*, Fig. 1; or they may extend through the enlargement, as shown.

It is well known that in making wheels by the old and common process of casting, introducing the molten metal at the top or upper side of the wheel-hub mold, the heavy stream of molten metal must fall with great force upon the bottom of the mold, which force is greatly increased by the rapidity with which the molten metal must necessarily be poured to prevent the sprue or conduits from "drawing air," or, in other words, to prevent the air or gas from violently rushing out of the mold at the same time and place while the molten metal is passing in, which, if not so prevented, would greatly impair the quality of the product, if not work a total failure of the cast.

Casting by the old way under such force also tends greatly to injure the bottom of the mold, causing, in many instances, a chopping of the metal within the mold, resulting in rough castings, and filling the liquid metal with impurities, which are carried to the rim and tread of the wheel, and cause imperfect wheels with what is called "blotched" or "sand" treads.

I overcome these difficulties by introducing the molten metal through the sprue or channel C into the basin D, and conducting it therefrom uniformly through the several radiating channels E E and F into the mold A. The united area of the sprues or channels F is preferably less than that of the channel or sprue C, causing a reaction, by which the velocity of the inflowing metal is reduced, the effect being regulated at will, by increasing or decreasing the sizes of the sprues or channels F. By this means the metal is caused to flow quietly, without commotion, upward into the hub of the mold, without danger to the mold from its force or velocity, and without chopping the mold, and such impurities as may he carried with the metal are skimmed off and retained within the basin D.

Further, the product is superior to those made by the ordinary process, especially when a whirling motion is given to the metal within the mold, by causing the currents to enter at an angle, as described. The metal is thus prevented from setting until the mold is filled. The shrinking of the molten metal in the top or upper portion of the hub (a frequent occurrence in ordinary casting) is also prevented,

as the upward flow of the metal into the hub portion insures the retention of a sufficient body of molten metal at this portion until the metal sets or hardens, while the hard molded face of the enlargement B′ insures a corresponding smooth face to the wheel-hub, where, in ordinary casting, the same would be rough and defective from the chopping of the mold.

It will be apparent that the core may be molded with the basin and channels therein, as shown in Fig. 3, or that said channels may be molded outside the enlargement in the sand.

Without limiting myself to the precise form of core shown, or to any specified number or arrangement of chambers or passages,

I claim—

1. The central detachable baked core B, with its enlargement B′, adapted to form a dry sand bottom to the hub portion of the mold, in combination with the basin D, larger in diameter than the central core-opening, and channels leading from the basin to the hub portion of the mold, substantially as specified.

2. The central detachable core B, having a central channel, C, and an enlargement, B′, at the lower end, and provided with conduits F, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN K. SAX.

Witnesses:

L. B. ENSIGN,

JOSEPH HILEMAN.