

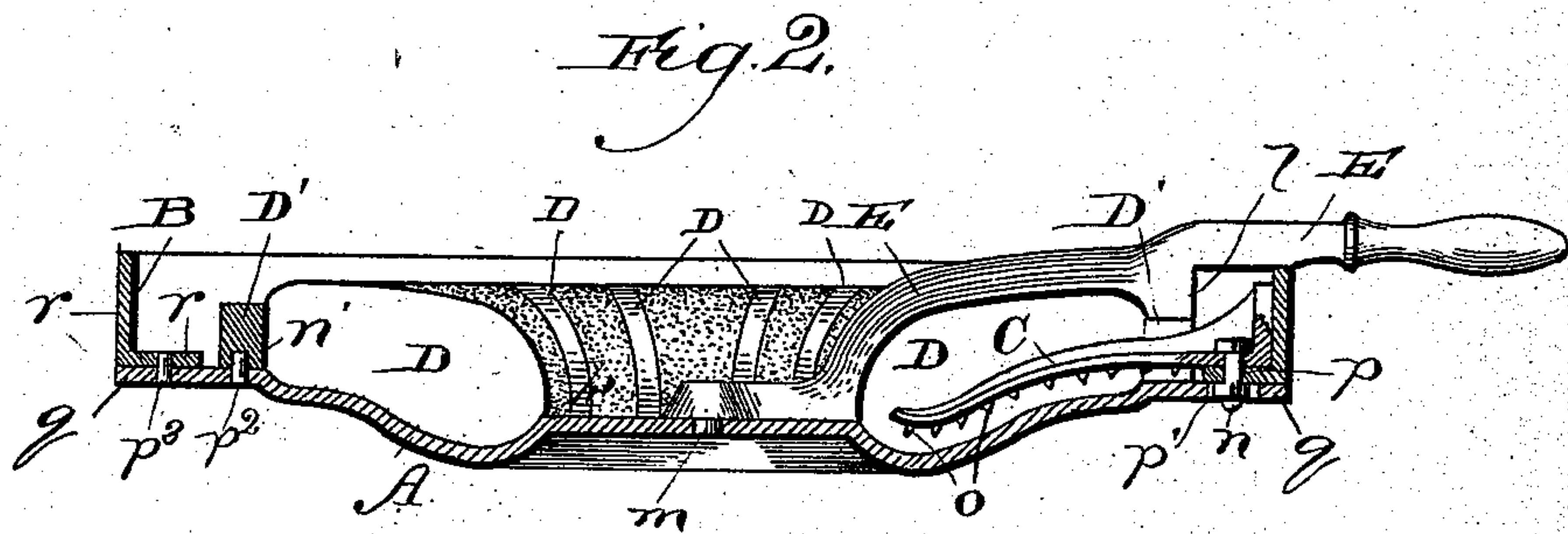
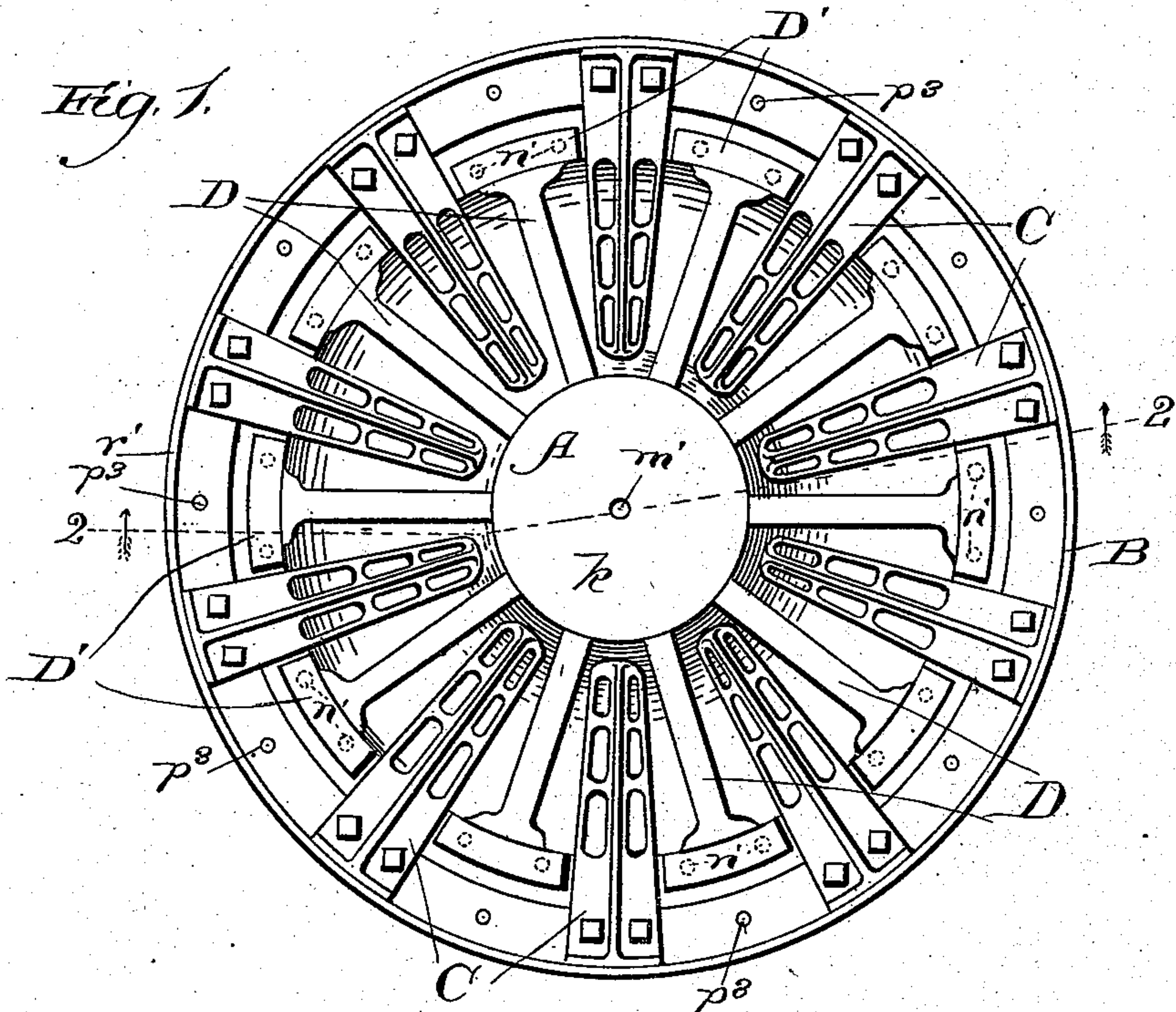
(No Model.)

J. R. DAVIES.

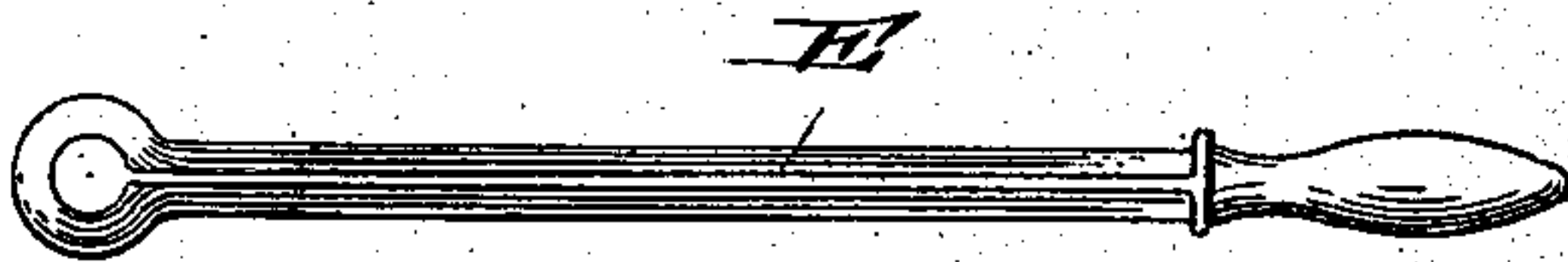
APPARATUS FOR CASTING CAR WHEELS.

No. 381,115.

Patented Apr. 17, 1888.



*Fig. 3.*



Witnesses:

*Ed. E. Gaylord.*  
*Chas. O. Gorton.*

Inventor:

*John R. Davies,*  
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*Attys.*



# UNITED STATES PATENT OFFICE.

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CAR WHEEL COMPANY, OF NEW JERSEY.

## APPARATUS FOR CASTING CAR-WHEELS.

SPECIFICATION forming part of Letters Patent No. 381,115, dated April 17, 1888.

Application filed October 4, 1887. Serial No. 251,409. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN R. DAVIES, a citizen of the United States, residing at Pullman, in the county of Cook and State of Illinois, have invented a new and useful Apparatus for Casting Car-Wheels, of which the following is a specification.

My invention relates to an improvement in the manufacture of the class of car-wheels in which the wheel is formed of a cast-metal center having a steel tire secured around it; and it relates, particularly, to an improvement in apparatus for casting the cast-metal centers, and especially to an improvement upon a form of core hitherto used in their manufacture, and consisting of separate sand cores for producing the radial ribs between the disks or sides placed loosely in the mold, and provided with tongues at their extremities to extend into a circular horizontal recess formed in the center core, in which recess the radial cores are supported and confined to hold them against displacement or upheaval by the molten metal poured into the mold in casting the centers. This manner of securing the cores against displacement by the molten metal, while it may effectually serve its purpose, produces radial openings or lateral perforations through the hub where the tongues on the radial cores extended, whereby the hub is very materially weakened and the cast metal wheel center rendered liable to fracture with use.

My object is to provide a construction of core whereby the wheel center may be formed without lateral openings in its hub, or with a laterally-imperforate hub, thus affording a center of greatly-increased strength over one formed with a core of the construction hereinbefore referred to as being hitherto used.

My invention consists in the general construction of my improved apparatus; and it also consists in details of construction and combinations of parts.

In the drawings, Figure 1 is a plan view of my improved apparatus ready to receive the sand for producing the core; Fig. 2, a sectional side elevation of the same, taken on the line 2 2 of Fig. 1, viewed in the direction of the arrows, and showing sand in place for producing the core, but removed from the partitions on the section-line to avoid obstructing from

view parts which it is desired to present; and Fig. 3, a plan view of the detachable sweep.

A is the core-plate of required form as to its upper surface to produce the desired shape of lower surface of the core.

B is a ring comprising the vertical portion  $r'$  and the horizontal portion  $r$ , having bolt-holes  $p$ . The core-plate at its flat edge  $q$  is provided with slots  $p'$ , the adjustment of the ring being such as to cause the bolt-holes  $p$  and slots  $p'$  to coincide, and to cause retaining-pins  $p^3$  on the part  $r$  to enter holes provided to receive them in the flat edge at flange  $q$ .

C denotes arbors or "chapllets," as they are also termed, preferably, for my particular purpose, but not necessarily, of the form shown, and provided with projections or spikes  $o$  on their under sides. These arbors are bolted at their rear ends to the horizontal portion of the ring B by bolts  $n$ , extending through the arbors and ring at the bolt-holes  $p$ , and having the nuts on the bolts extending into the slots  $p'$  in the plate, whereby the arbors and rings are firmly secured together and rest firmly on the plate. The arbors extend the same distance radially toward a common center.

D denotes partitions provided with heads  $D'$ , and having on their under sides pins  $n'$ , which extend into openings  $p^2$ , provided to receive them in the core-plate. The partitions D, which are readily removable, extend radially between the arbors C the same distance toward the common center and somewhat beyond the arbors.

E is a lever or sweep of the required form on its under side to produce the desired shape of upper surface of the core, and at its extremity it is provided with a pivot-pin,  $m$ , which is inserted into an opening,  $m'$ , in the center of the core-plate, whereby a lug,  $l$ , toward the handle portion, coincides with the circle of heads  $D'$ , of the partitions D, and a portion between the handle and lug  $l$  rests upon the upper edge of the vertical part  $r'$  of the ring B.

The core is formed in an ordinary way by the use of sand having flour mixed with it to increase its cohesiveness, the mixture being dumped upon the core-plate A and properly tamped, after which the surplus material is loosened by turning the sweep E (whereby at the same time the upper surface of the core is



also shaped) and removed. The core (upon removal of the sweep and partitions D) is then placed in a suitable oven and baked until the sand mixture is properly hardened, when it is removed from the oven. The withdrawal of the partitions D leaves spaces between the radial arbors, or, rather, between the casings formed of the hardened mixture of sand and flour enveloping the arbors.

To mold a wheel-center the core is lifted from the plate A and adjusted in a mold, with a cylindrical core placed in the center of the space *k* to form the axle-opening through the hub, leaving a space around this core sufficient to form the metal of the hub, and from which the radial spaces produced by the partitions D extend when the metal is poured, producing a cast wheel-center having a hub devoid of objectionable lateral openings.

After the molding operation, (during which the molten metal has burned out the flour ingredient of the sand mixture, thereby reducing the sand thus deprived of its agent of cohesiveness to a crumbled condition,) the bolts *n* are drawn, permitting the ring B to be removed and the arbors C to be withdrawn when the casting is emptied of the loose sand, and upon cooling is ready to have the tire adjusted.

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

1. A core-support for use in casting car-wheel centers, comprising a ring and arbors secured to the ring and extending toward the center thereof, substantially as described.

2. A core-support for use in casting car-wheel centers, comprising a ring, B, having a vertical portion, *r'*, and a horizontal portion, *r*, and arbors secured to the ring and extending radially therefrom toward its center, substantially as described.

3. A core-support for use in casting car-wheel centers, comprising a core-plate, A, a ring, B, upon the core-plate, and arbors C, secured to the ring and extending radially there-

from toward its center, substantially as described.

4. A core-support for use in casting car-wheel centers, comprising a core-plate, A, a ring, B, upon the core-plate, arbors C, secured to the ring and extending radially therefrom toward its center, and partitions D, removably secured between the arbors; substantially as described.

5. A core for use in casting car-wheel centers, comprising, in combination, a ring, B, and arbors C, enveloped in hardened sand, secured to the ring and extending toward the center thereof, substantially as described.

6. A core for use in casting car-wheel centers, comprising, in combination, a ring, B, arbors C, secured to the ring and extending radially therefrom toward its center, and hardened sand enveloping the individual arbors and leaving radial spaces for forming the ribs of the wheel, substantially as described.

7. The combination, with a core-box for use in casting car-wheel centers, of a pivotal sweep, E, comprising a lever having a handle portion at one end, and at its opposite end pivotally attachable to and detachable from the core-plate, substantially as and for the purpose set forth.

8. The combination of a core-plate, A, a ring, B, upon the core-plate, arbors C, secured to the ring and extending radially therefrom toward its center, partitions D, removably secured between the arbors, and a pivotal sweep, E, substantially as described.

9. The combination of a core-plate, A, a ring, B, upon the core-plate, arbors C, secured to the ring and extending radially therefrom toward its center, partitions D, removably secured between the arbors, and a pivotal sweep, E, having a pivot, *m*, and a projection, *l*, substantially as described.

JOHN R. DAVIES.

In presence of—

J. W. DYRENFORTH,  
CHAS. E. GAYLORD.