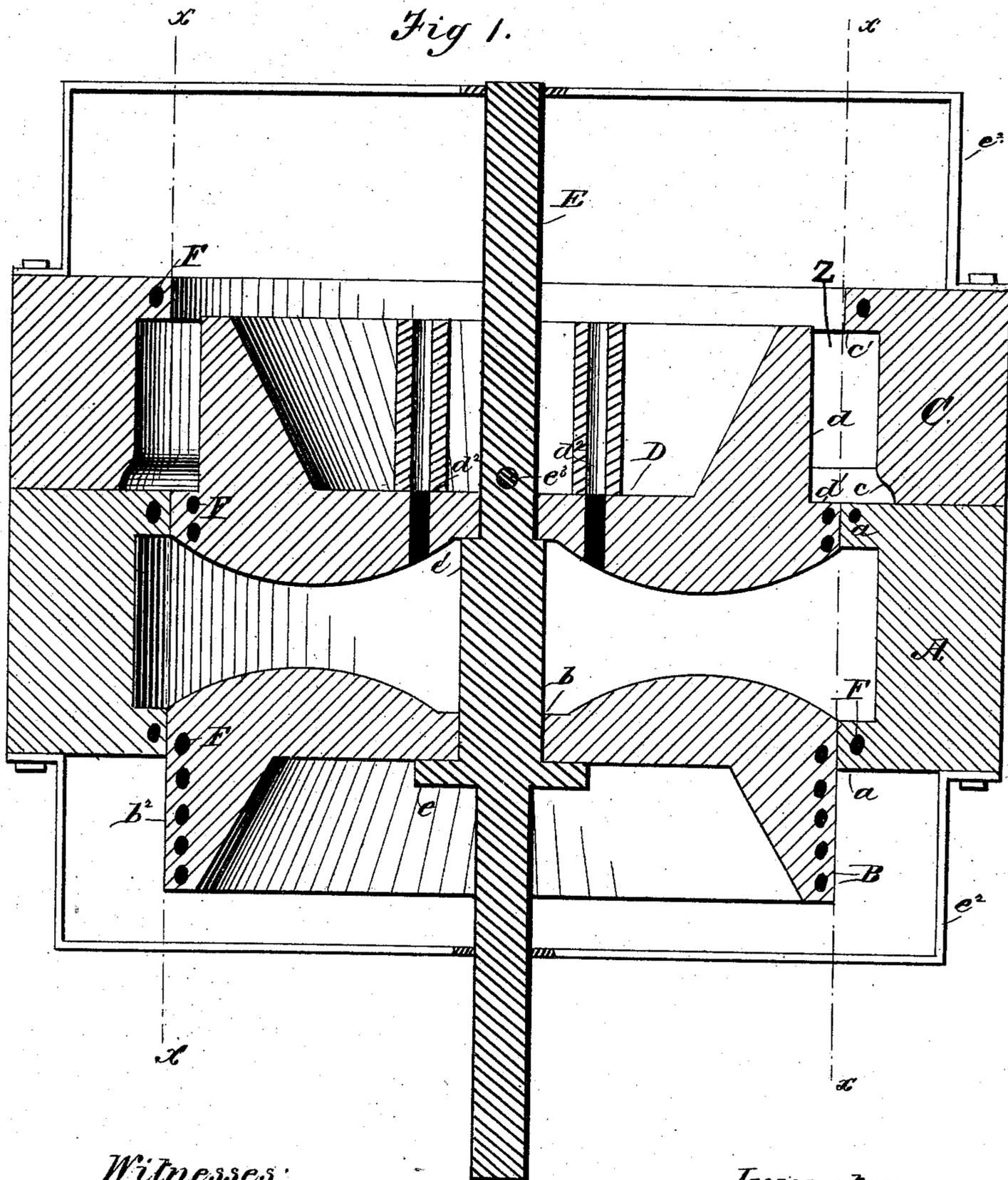


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No. 156,256.

Patented Oct, 27, 1874.



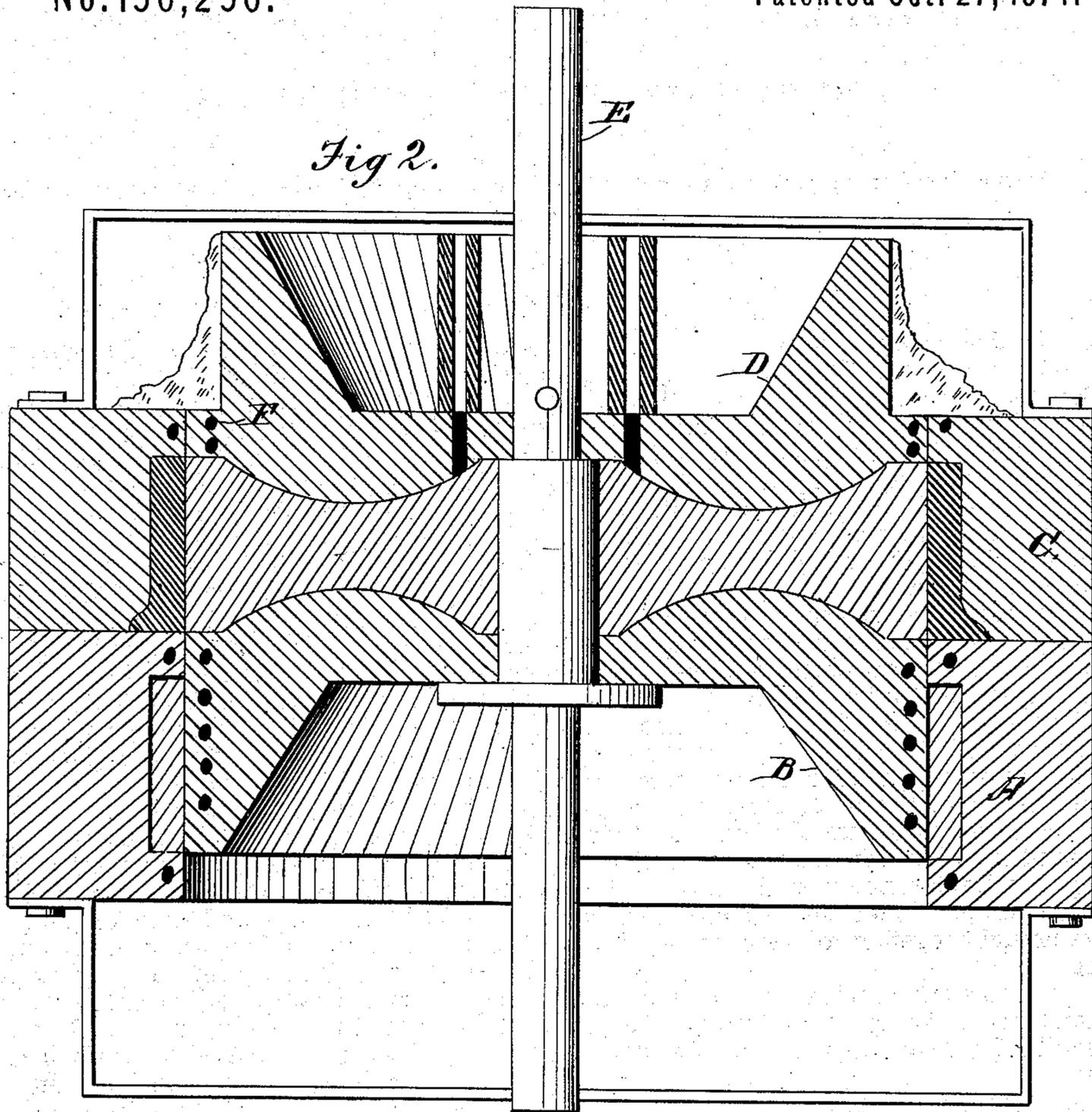
Witnesses;
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H. W. Beader

Inventor
William A. Miles

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UNITED STATES PATENT OFFICE.

WILLIAM A. MILES, OF COPAKE IRON WORKS, NEW YORK.

IMPROVEMENT IN CASTING CAR-WHEELS.

Specification forming part of Letters Patent No. **156,256**, dated October 27, 1874; application filed August 5, 1874.

CASE B.

To all whom it may concern:

Be it known that I, WILLIAM A. MILES, of Copake Iron Works, in the county of Columbia and State of New York, have invented new and useful Improvements in Casting Car-Wheels; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings and to the letters of reference marked thereon.

This invention relates to the casting of that class of car-wheels which have their central and their peripheral portions formed of different kinds or qualities of metal.

The same will be first fully described, and then be distinctly set forth in the claim.

In the drawings, Figure 1 represents a central vertical section of the mold with the parts in the positions occupied when the metal is poured into it to cast the wheel and rim; and Fig. 2, a similar view with the parts in the position occupied when the two masses of metal are brought together for the purpose of welding.

To enable others skilled in the art to understand my invention and practice the same readily, I will proceed to fully describe the same.

A represents the main or lower portion of the flask, provided above and below with the projecting flanges *a a*, as shown. B represents the drag, having its upper face of any suitable conformation, and adapted in size to fill the circular space within the lower flange *a*, the same being provided with a central opening, *b*, and also with a dependent circumferential rim, *b²*, as shown. C represents the upper portion of the flask, provided below with the recess *c*, adapted to form the flange of the car-wheel rim, and above with the overhanging flange *c'*, as shown. D represents the cope, having its lower face of suitable conformation, as shown, and provided with a central opening, and with the flange *d*, the latter being adapted to form one of the sides of the mold for casting the car-wheel rim. The circumference of the flange *d*, it will be observed, is less than that of the cope, so that the latter has a projecting edge, *d¹*, as shown. *d² d²*

represent openings, through which the metal for the central portion of the wheel is introduced. E represents a spindle, adapted, by means of shoulders *e e¹*, to support the drag and cope, and by means of which they may be raised with the intermediate casting when desired. *e² e²* represent suitable guides above and below the flask, by means of which the spindle is guided in its movement. *e³* represents a suitable pin or key, by means of which the drag or cope are securely united together, and the latter thus prevented from being raised by the inflow of metal. F F represent pipes located in various parts of the flask, as shown, which are adapted to conduct cold water, for the purpose of preventing the parts of the flask from unduly expanding.

When the parts are in place it will be observed that the outer circumference of the drag and the inner circumference of the flanges *a a c'* are in the same vertical plane *x x*, so that the drag may be moved freely in a vertical direction without interfering with the flask. It will also be observed, when the parts are in place, that the space within the mold in which is cast the central or body portion of the wheel, extends at the circumference outward beyond the vertical line *x x*, and that the corresponding space, also within the mold, in which is cast the rim of the wheel, extends inward beyond the same vertical line, so that in each mold there is, when the casting is effected, an excess of metal projecting beyond the vertical line referred to, this line being that upon which the parts of the wheel unite when brought together.

From the foregoing description it will be understood that the rim and the central portion of the wheel are cast in two separate and independent molds, one being located over the other, and that they are afterward brought together by a vertical movement of the drag.

The operation is as follows: The parts being suitably prepared and arranged, molten metal of proper kinds is simultaneously introduced into each of the molds through the openings *d² d²* and space *z*, and while it is still in a fluid condition, the drag is raised by any proper means until the body of the wheel rests in the

same horizontal plane as the rim. In raising the drag, however, it will be observed that the excess of metal beyond the vertical line *x x* in the lower mold is held by the upper flange *a*, by which means the crust formed by the chilling of the metal from contact with the flask is retained and a fluid surface is exposed instead.

The consequent movement also of the cope removes, by means of its projection *d'*, the excess of metal in the upper mold, and leaves exposed a fluid-surface, which unites readily and perfectly with the fluid-surface of the body of the wheel.

By the vertical movement also of one body of metal upon the face of the other, the particles of each are thoroughly intermingled, so that the connection between the two is most perfectly formed.

In order to remove the excess of metal left in the lower part *A* of the flask after the wheel has been removed, it is made in two parts, being divided vertically or horizontally, as may be desired.

By means of the water-pipes, the parts of the flask are prevented from expanding, so as to interfere with the vertical movement of the drag.

It will be understood, of course, that all the parts of the molds are suitably covered with sand to protect them from injury by the hot metal.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The described process of casting, consisting in pouring different kinds of molten metal in independent chambers of a mold simultaneously, and bringing the separated portions of molten metal in contact by a progressive movement of one of the said chambers upon or within the other, substantially as described.

2. In the process described, dividing the separated portions of fluid metal centrally or at their intended line of union, for the purpose of rejecting the crust or chilled portion, substantially as described.

3. In a mold for casting car-wheels, the combination of the following elements: A flask having the parts *A* and *C*, with projections *a* *a'*, a drag, *B*, adapted to move vertically, and a cope, *D*, having the projection *d*, as described.

4. The combination of the spindle *E*, the drag *B*, cope *D*, the spindle being adapted to unite the two together and to give them vertical movement when operated, substantially as described.

This specification signed and witnessed this 5th day of August, 1874.

WILLIAM A. MILES.

Witnesses:

HARRY C. CLARK,
JAMES J. FINLEY.