2 Sheets--Sheet 1.

W. A. MILES.

Casting Car-Wheels.

No. 156,255. Patented Oct. 27, 1874.

Fig. 1

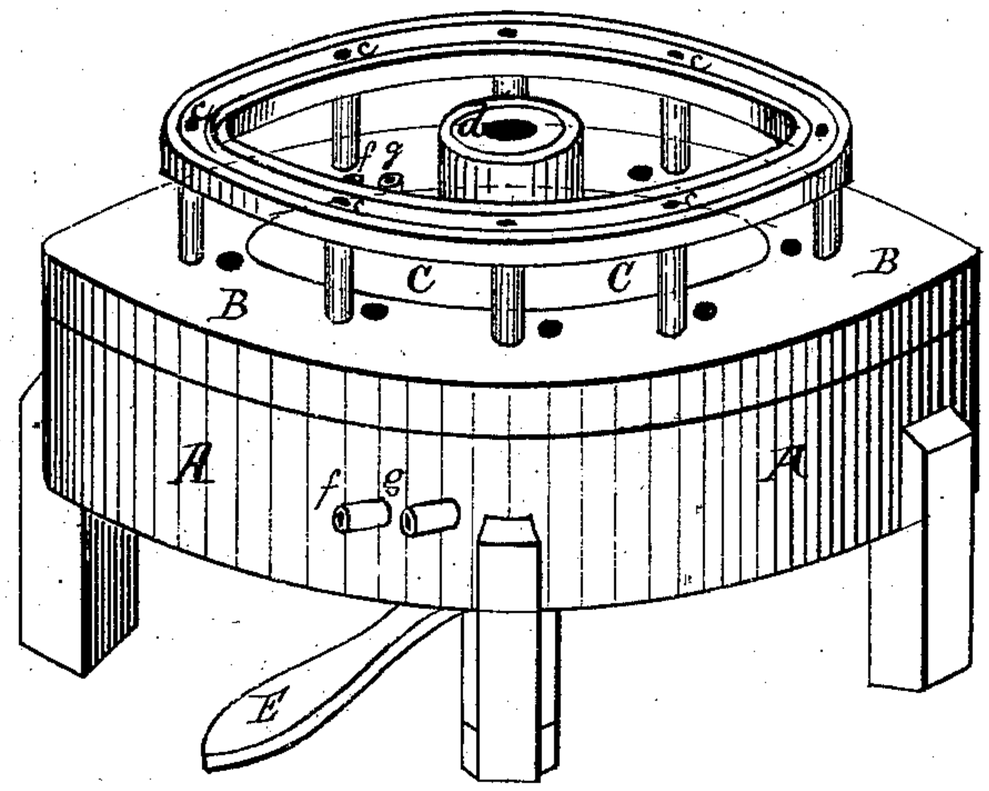
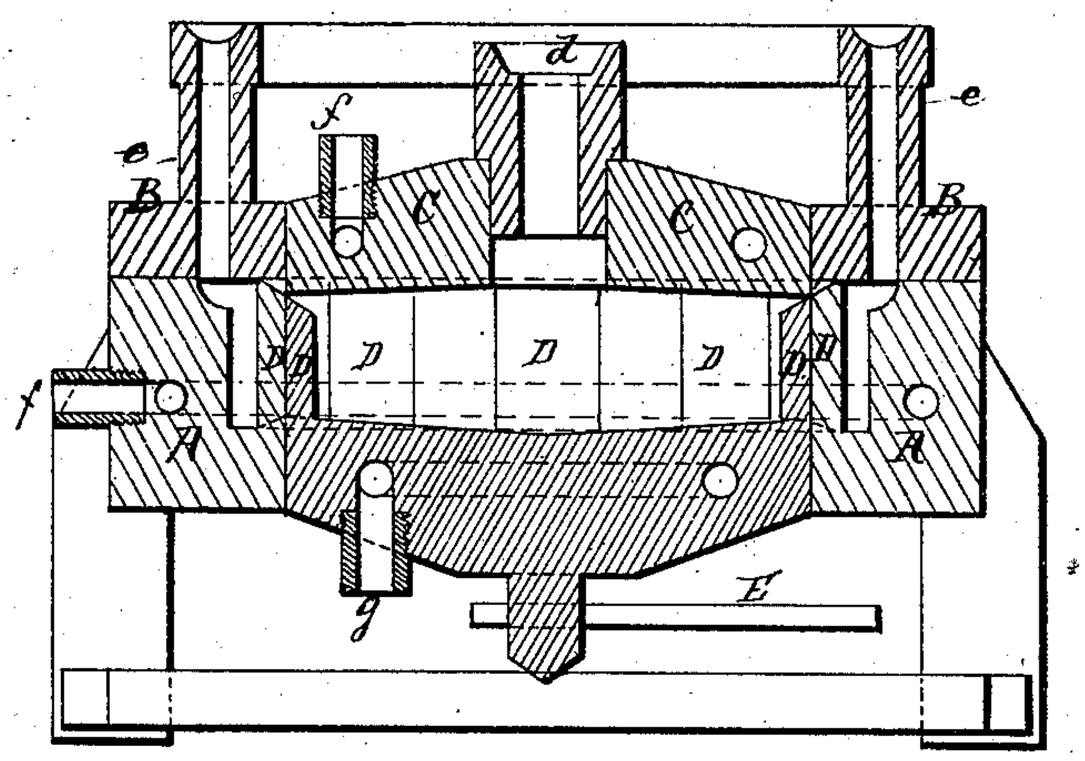


Fig. 2.



WITNESSES:-

W. A. Weightman

Maurice Aloberg.

INVENTOR.

William A. Miles

by Coleman & Malcomson

his Attorneys

THE GRAPHIC CO. PHOTO-LITH. 39 & 41 PARK PLACE, N.Y.

2 Sheets--Sheet 2.

W. A. MILES.

Casting Car-Wheels.

No. 156,255. Patented Oct. 27, 1874.

Fig. 3.

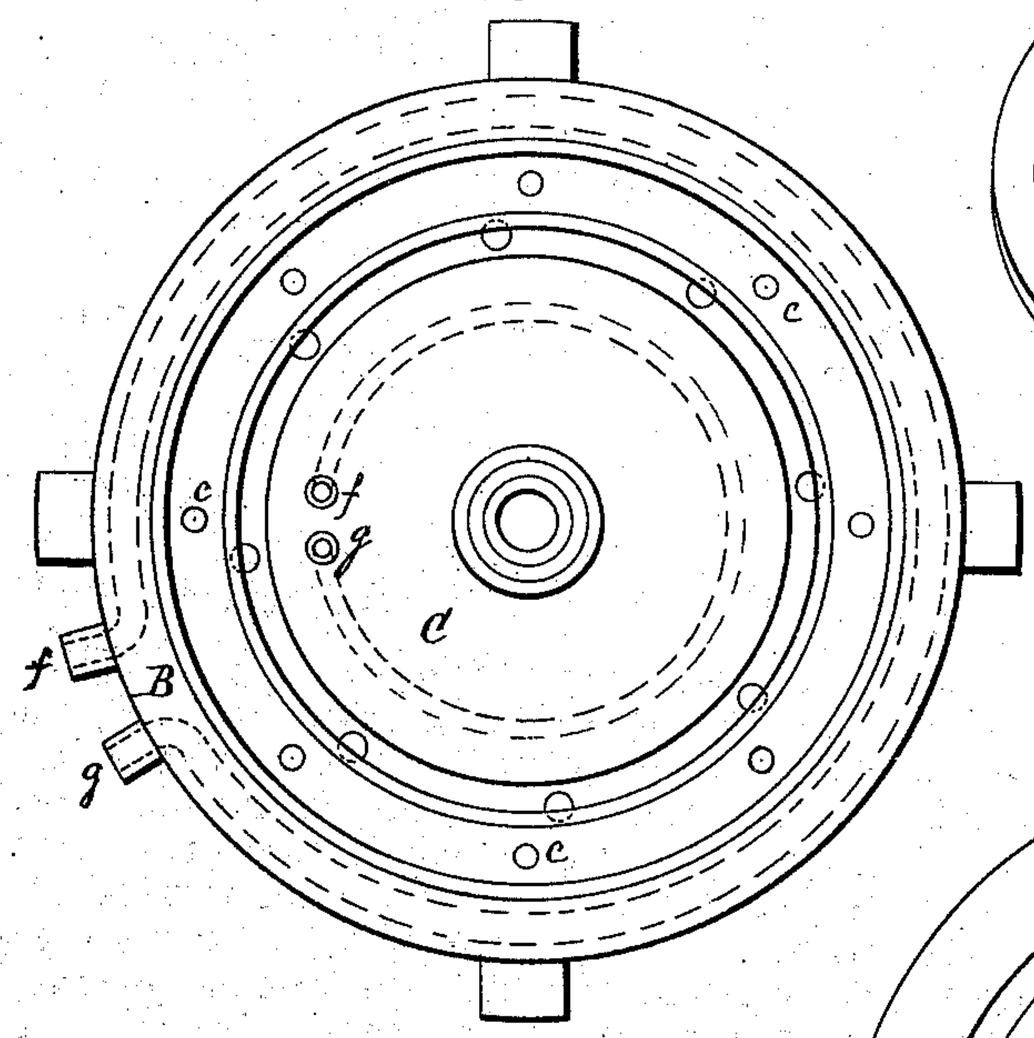


Fig. 6.

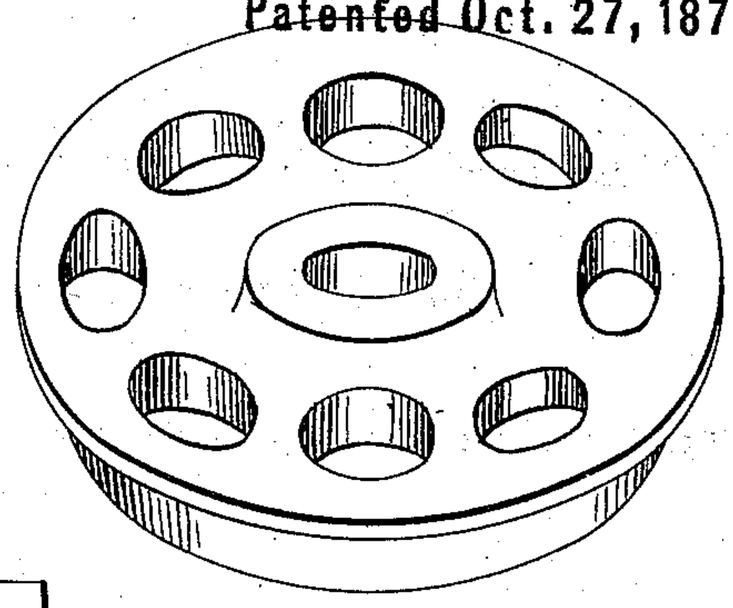


Fig. 4.

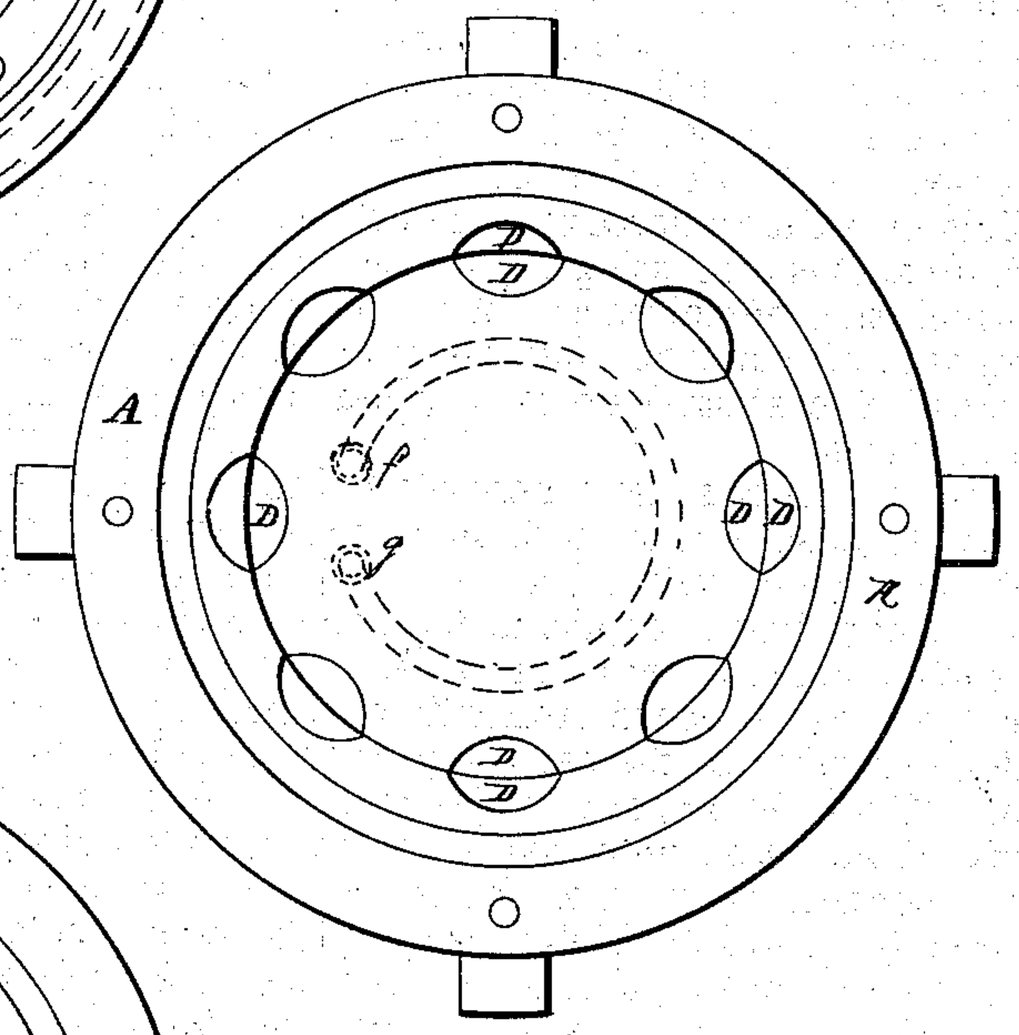
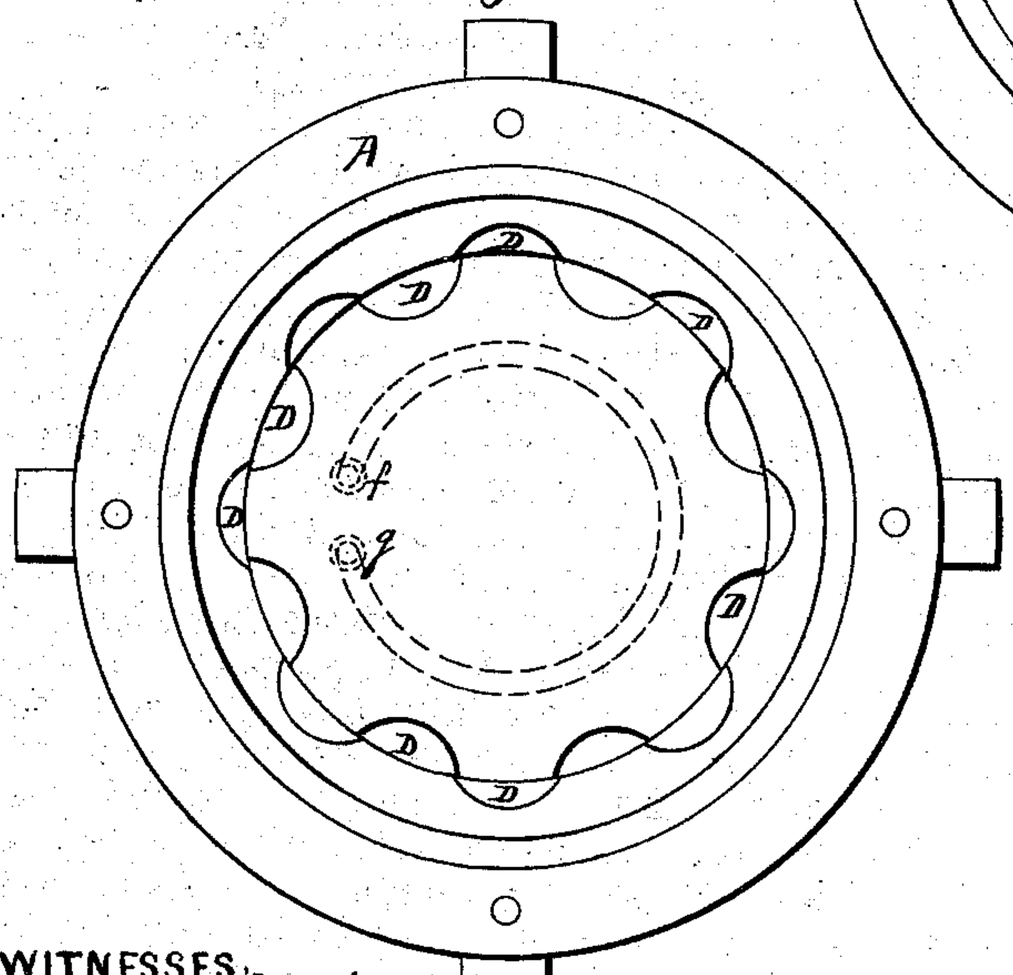


Fig. 5.



WITNESSES:-

W. A. Weightman

Maurice Alsberg.

INVENTOR.

William A. Miles

by Cochrane & Macomber

his Attorneys

THE GRAPHIC CO. PHOTO-LITH. 39 & 41 PARK PLACE, N.Y.

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. **156,255**, dated October 27, 1874; application filed July 16, 1874.

CASE A.

To all whom it may concern:

Be it known that I, WILLIAM A. MILES, of Copake Iron Works, Columbia county, in the State of New York, have made certain new and useful Improvements in Casting Car-Wheels; and I hereby declare the following to be a full and clear description thereof.

This invention relates to an improved mode and apparatus for casting car-wheels, by means of which the central part of the wheel may be composed of cast-iron, and the outer portion or tread of cast-steel or some other suitable harder metal.

Different means have heretofore been employed for this purpose with more or less success; and my invention has for its object more particularly the accomplishment of this result, in such a manner that the outer portion or tread of steel or hard iron will be perfectly welded or fused to the central portion of soft iron. This I do by pouring the inner or softer metal at the same time that the metal for the outer portion or tread of the wheel is being poured, the metal for such outer portion being steel or hard iron, and I so arrange the flask in which the casting is made that the two metals are kept separate until the pouring is completed, and are then immediately brought in contact with each other, and perfectly fused or welded together, this result being accomplished by means of the peculiar construction of the cores for forming the openings in the wheel, the same being made in two parts, one of which is movable and the other stationary, as I will now proceed to describe, making reference to the accompanying drawings, which form a part of this specification, in which drawings—

Figure 1 is a perspective view of my improved flask for casting car-wheels. Fig. 2 is a vertical cross-section of the same through the lines *a a*. Fig. 3 is a top view of the same. Fig. 4 is a top view, with the upper portion having the gates for feeding the steel or hard metal, and the central cope removed. Fig. 5 is the same as Fig. 4, with the lower movable portion of the flask and the cores turned into position for commencing to flow. Fig. 6 represents the construction of wheel as it appears when cast.

A is the body of the flask, upon the top of which is placed the circular frame B, which has a trough or runner passing around its entire circumference, leading from which are the gates *c c*, through which the steel or hard metal is poured for the outer portion or tread of the wheel. C is the central cope, having a gate, *d*, by means of which the iron is poured for the central part of the wheel. In the top portion of the flask or outer cope I place sprues or risers *e e*. D D are the cores, made in two pieces, one of which is fastened to the main or outer portion of the bottom of the flask, which is stationary, and the other half of each core is fastened to the inner part of the dreg or bottom of the flask, which inner portion has a circular movement. These cores D D, which pass vertically through the mold, are made elliptical in section, and their greatest diameter being equal to the distance between each core the outer portion of the flask or mold, into which the metal for the tread of the wheel is poured, will be separated from the inner portion by turning the central part of the dreg or bottom, by means of the handle E, a sufficient distance to accomplish this purpose. I also fasten the central cope C to the inner halves of the cores, so that it will move with them and the central part of the dreg.

Around the outer portion of the flask I sometimes place pipes for the passage of warm water, so as to partially heat the chill before pouring, or to temper the sand, and in the body of the central cope and central part of the dreg or bottom I also place pipes, which have outlets *f* and inlets *g g*, so that a stream of cold water may be passed through them, and help to cool the central part of the casting.

The entire flask and cores are made of metal, and protected from the action of the hot iron by clay-wash or core-sand.

In order to cast a wheel in my improved flask, and give to such wheel the necessary toughness and strength, the following operation is followed: The mold having been first prepared, the flask is arranged with the split

cores D D turned so that their halves alternate, and thus cut off all communication between the central part of the mold and the outer circumference with which the gates *c c* connect, as shown in Fig. 5. The pouring of the hard and soft metal is then commenced simultaneously, the soft metal being poured through the central gate *d*, and the steel or hard metal through the gates *c c*, until the mold is full, when the movable part of the dreg, to which the inner halves of the cores are attached, is immediately turned by the handle E into the position shown in Fig. 4, when the soft metal in the center and the steel or hard metal around the outer portion of the mold will be brought together at the spaces left between the cores, and the sprues or risers *e e* being situated directly over those points the metals will be kept in a molten state until a perfect fusion or weld takes place.

By this means a wheel is produced which is provided with a hard-metal tread and a center of softer metal, which are perfectly fused or welded together in the casting, without having any intervening substance, and without bringing the two metals into contact with each other until they have been entirely poured into the flask.

I claim—

The split cores D, one side of which is rigidly attached to the flask, and the other adapted to revolve, substantially as described.

W. A. MILES.

Witnesses:

A. B. MALCOMSON, Jr.,

MAURICE ALSBERG.