

W. J. COCHRAN.
Car-Wheels.

No. 148,669.

Patented March 17, 1874.

Fig. 1.

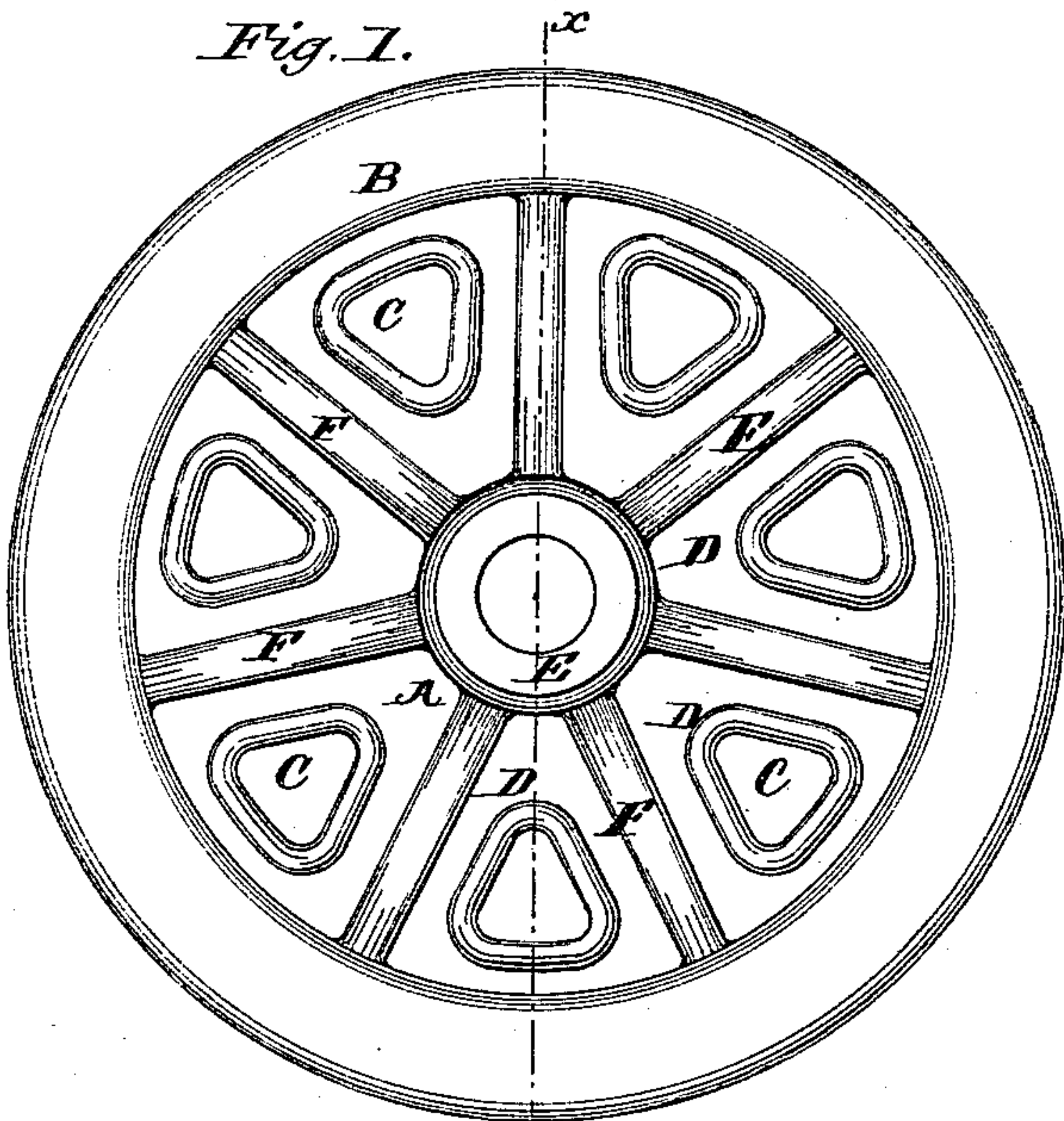


Fig. 2.

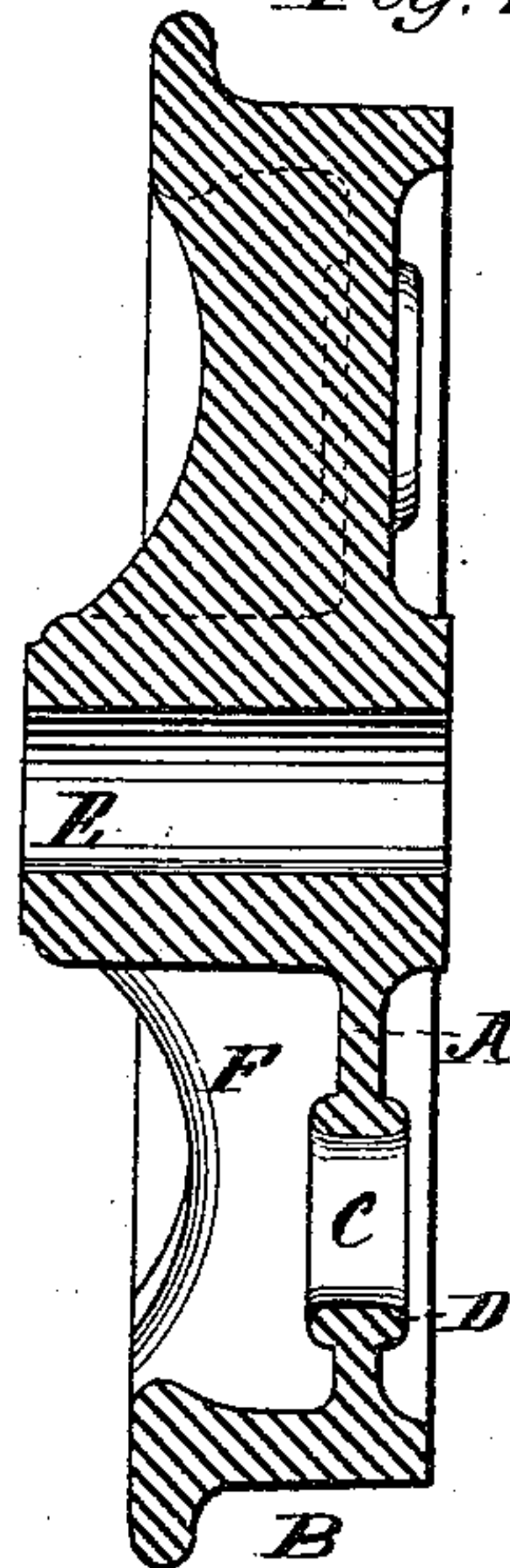


Fig. 3.

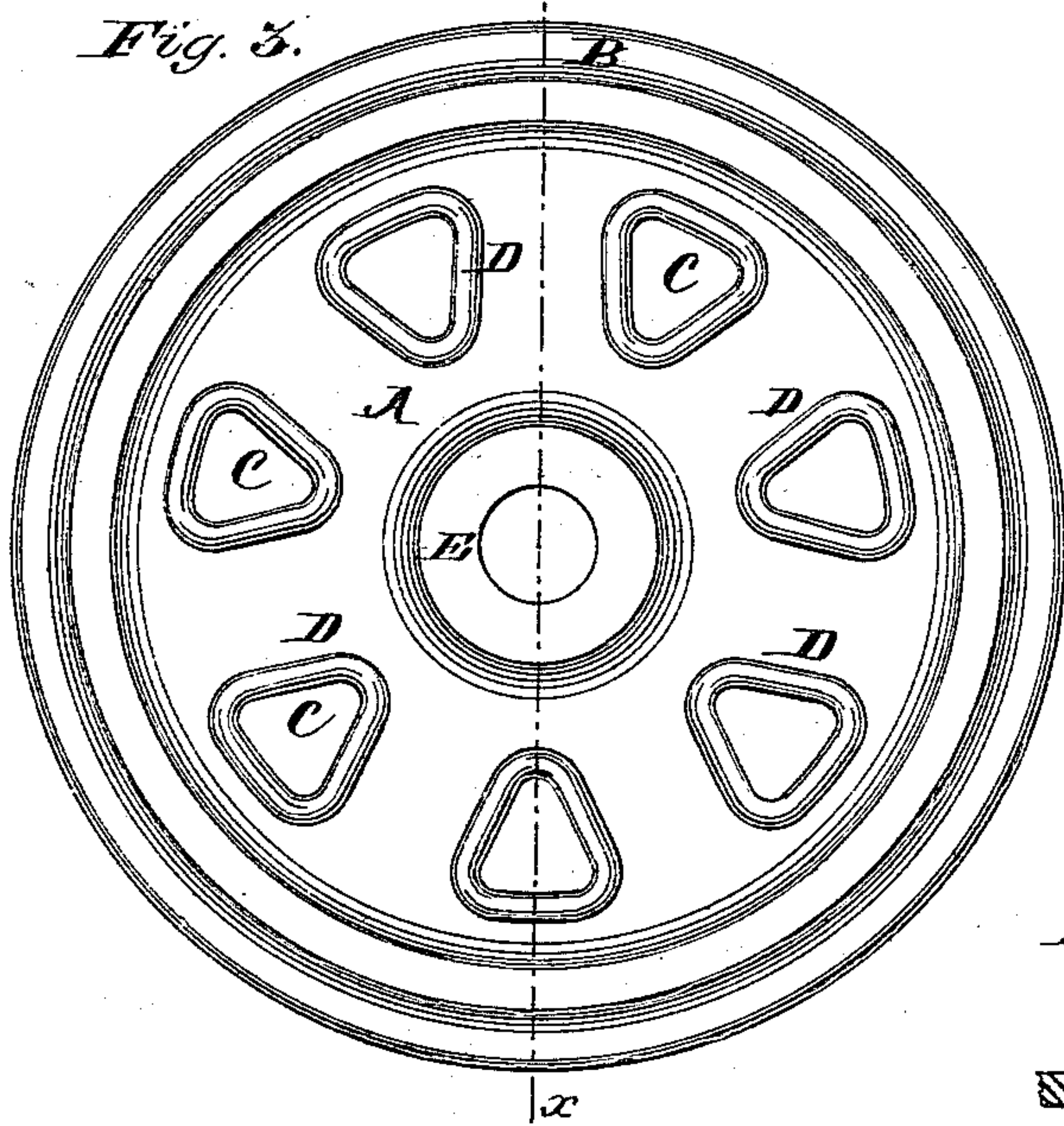


Fig. 4.

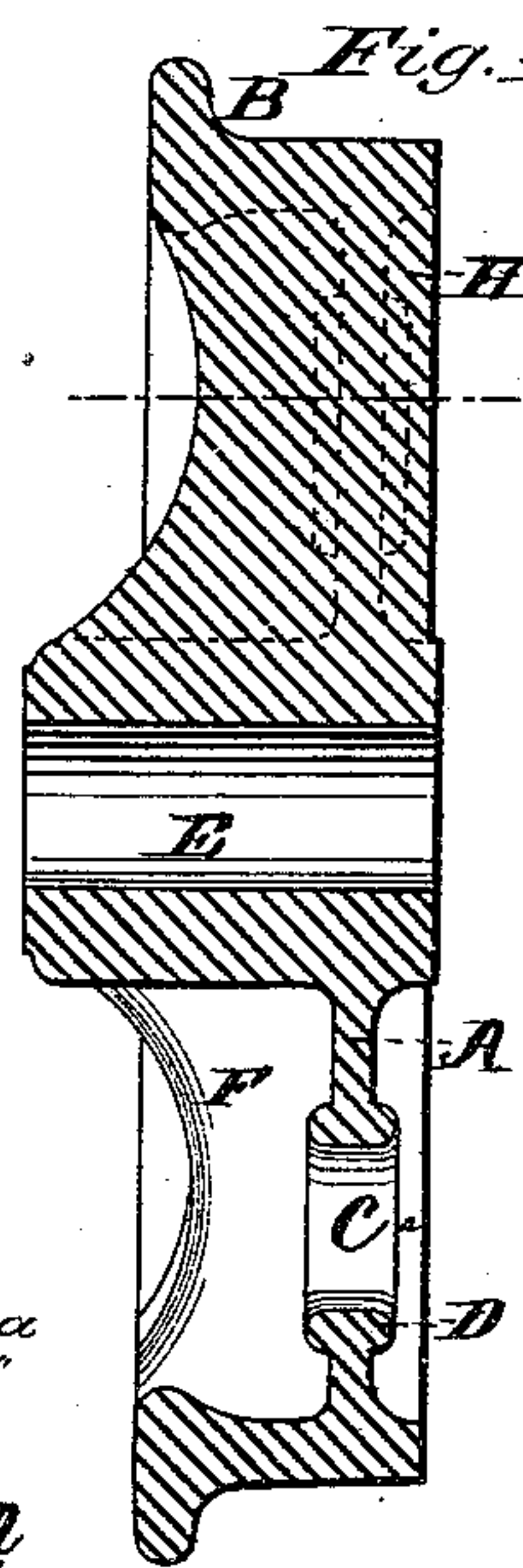


Fig. 4^a.

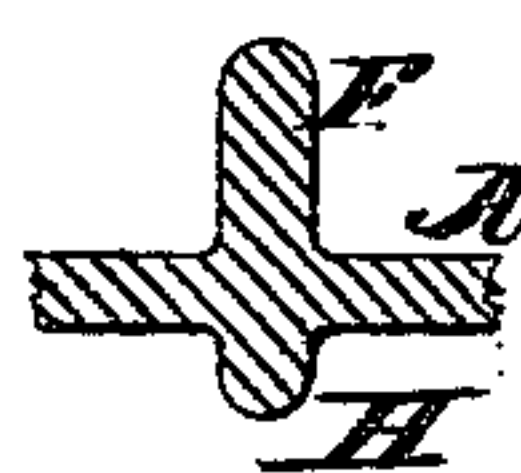
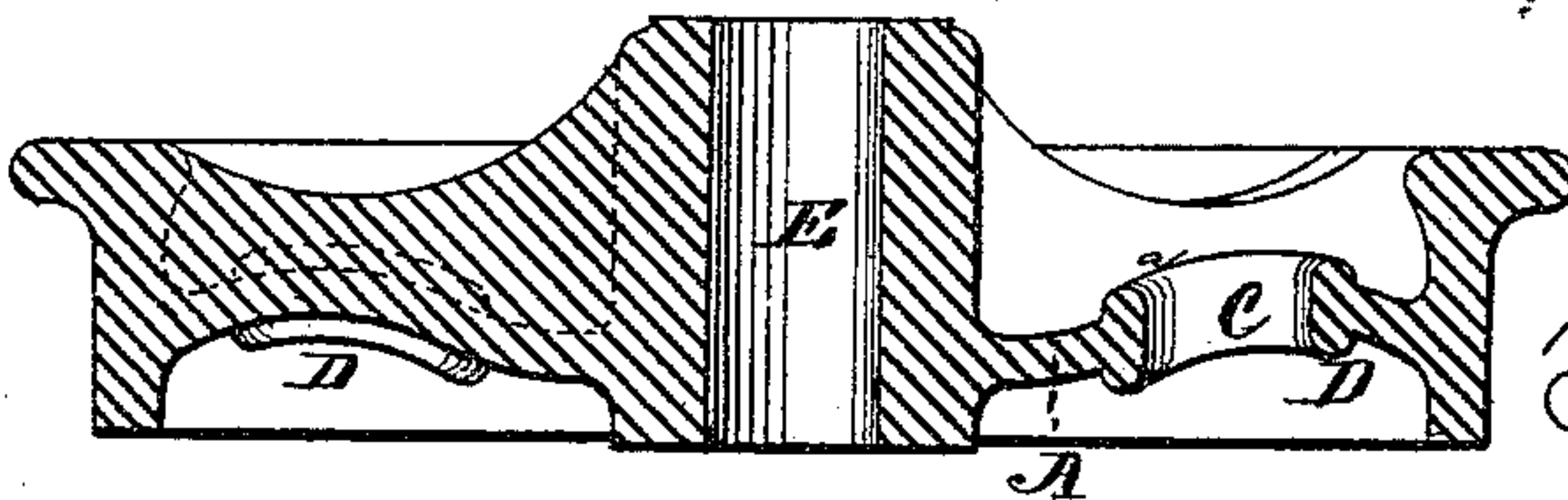


Fig. 5.



Witnesses:

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UNITED STATES PATENT OFFICE.

WILLIAM J. COCHRAN, OF BALTIMORE, MARYLAND.

IMPROVEMENT IN CAR-WHEELS.

Specification forming part of Letters Patent No. **148,669**, dated March 17, 1874; application filed March 3, 1874.

To all whom it may concern:

Be it known that I, WILLIAM J. COCHRAN, of Baltimore, in the county of Baltimore and State of Maryland, have invented certain new and useful Improvements in Car-Wheels, of which the following is a specification:

This invention has for its object to furnish a car-wheel which shall be lighter, more durable, and less expensive than others heretofore constructed, greater strength being also obtained with a less expenditure of metal. The invention consists, among other things, in a cast-metal car-wheel, the web portion of which is provided near the rim or tread with a series of openings or apertures, the edges of which are surrounded, or partially so, by ribs corresponding in shape to the form of the openings, and having rounded or curved and rounded backs and corners, the object of this construction being to provide means whereby the chilling of the tread portion of the wheel may take place without causing the chill to spread into the web portion, the ribs also contracting, expanding, and cooling equally with the web, so as to retain their form or shape for imparting greater strength and rigidity to the wheel. The invention further consists in constructing a car-wheel with a web or plate, which is located at one side of the tread, while the opposite side of the latter is supported by a series of spokes radiating from the hub, and terminating at the tread, a series of ribs or projections being also formed at the side of the web opposite that where the spokes are located, and directly in line with the same, so as to produce a wheel which shall possess the desired requisites of strength, lightness, and durability.

In the accompanying drawings, Figure 1 is a side elevation of a car-wheel constructed according to my invention. Fig. 2 is a vertical section on the line *x* of Fig. 1. Fig. 3 is a side elevation of a wheel provided with a web, spokes, and strengthening-ribs. Fig. 4 is a section on the line *x* of Fig. 3. Fig. 4^a is a detail view representing the web, spokes, and strengthening-ribs. Fig. 5 shows my invention applied to a wheel having a waved or corrugated web.

Cast-metal car-wheels, as heretofore constructed with chilled treads, are invariably de-

fective, for the reason that the chill spreads or penetrates the metal of the web portion, thus rendering the same more liable to break, and necessitating the formation of a web of a greater bulk or thickness, which obviously adds to the weight of the wheel, without imparting a corresponding degree of strength to the same.

I propose to furnish a cast-metal car-wheel which shall possess the requisites of lightness and strength combined; and to this end the web portion A of the wheel is provided, near the tread or rim B, with a series of openings, C, the edges of which are surrounded, or partially so, with ribs or projections D on one or both sides, corresponding in form to the openings in the web. The web A is located at one side of the rim, and is cast with the same and the hub E, and the opposite side of the rim is supported by a series of spokes, F, which radiate from the hub to the rim, and are located one between each pair of the openings in the web.

In the process of casting the wheel, it will, of course, be apparent that the flask or mold corresponds in form with the shape of the wheel, and that, in order to produce a chilled tread or rim, a peripheral chill or metallic ring is resorted to. The chilling of the tread results, however, as now performed, in a partial chilling of the metal of the web adjacent to the rim, which it is my object to prevent, so as to furnish a wheel having the rim alone chilled or hardened, which obviously results in the production of a wheel less liable to be broken or fractured.

I propose to accomplish the desired result by surrounding, or partially so, the openings in the web with the ribs D, which are of a sufficient size or bulk to serve as a barrier for preventing the chilling action to take place in regard to the metal of the web. The ribs are, in order to add to their efficacy, provided with rounded or curved corners at their junction, and with rounded or arc-shaped backs *a*, so that, when the contraction of the metal of the rim occurs, they will retain their original form or shape, and effectually prevent the chilling action from spreading.

The ribs located in respect to the openings in the web, as described, and being made suf-

ficiently large, they will retain heat the same as the web, and expand and contract in unison with the same, so as to obtain a regular cooling of the web. In addition to the functions of the ribs above stated, they are conducive of adding greater strength and durability to the finished wheel, which, in connection with the supporting-spokes, will enable the latter to resist all circumferential and lateral strains, while not depriving it of its elasticity due to the softness of the metal of the web.

In order to furnish a car-wheel which shall even be more firm and durable than the one above described, I propose to form on the side of the web a series of ribs, H, shown in Figs. 4 and 4^a, which radiate from or near the hub, and terminate at the rim. Said ribs are located directly opposite the spokes F, and they are designed, in connection with the same, to strengthen the web to a great extent, and in such a manner as to enable comparatively less metal to be used in the construction of the body of the wheel.

As my invention depends upon the employment of a rib for the purpose of housing the heat, and for preventing the spreading of the chill during the process of casting the wheel, I intend to apply such rib upon the opposite side or sides of spokes of any form, arranged, as usually, between the tread and the hub of the wheel.

I claim as my invention—

1. In a cast car-wheel having a chilled tread, the web portion A, having a series of open rings, C, located in proximity to the rim B, and provided with a rib or projection, D, substantially as and for the purpose described.

2. In a cast-metal car-wheel having a chilled tread and a web provided with openings near the rim, the ribs around, or partially around, said openings, and provided with rounded corners at their junctions, and with curved backs *a*, substantially as and for the purpose described.

3. A car-wheel having a web, A, at one side of the rim and hub, and a series of spokes, F, at the opposite side, said web being provided with a series of openings near the rim having surrounding or partially-surrounding ribs, substantially as described.

4. In a car-wheel having a web, A, and spokes F, the strengthening-ribs H, formed on the web in line with the spokes F, substantially as and for the purpose described.

In testimony that I claim the foregoing I have hereunto set my hand this 2d day of March, 1874.

WM. J. COCHRAN.

Witnesses:

JOHN E. COCHRAN,
ALBERT H. NORRIS.