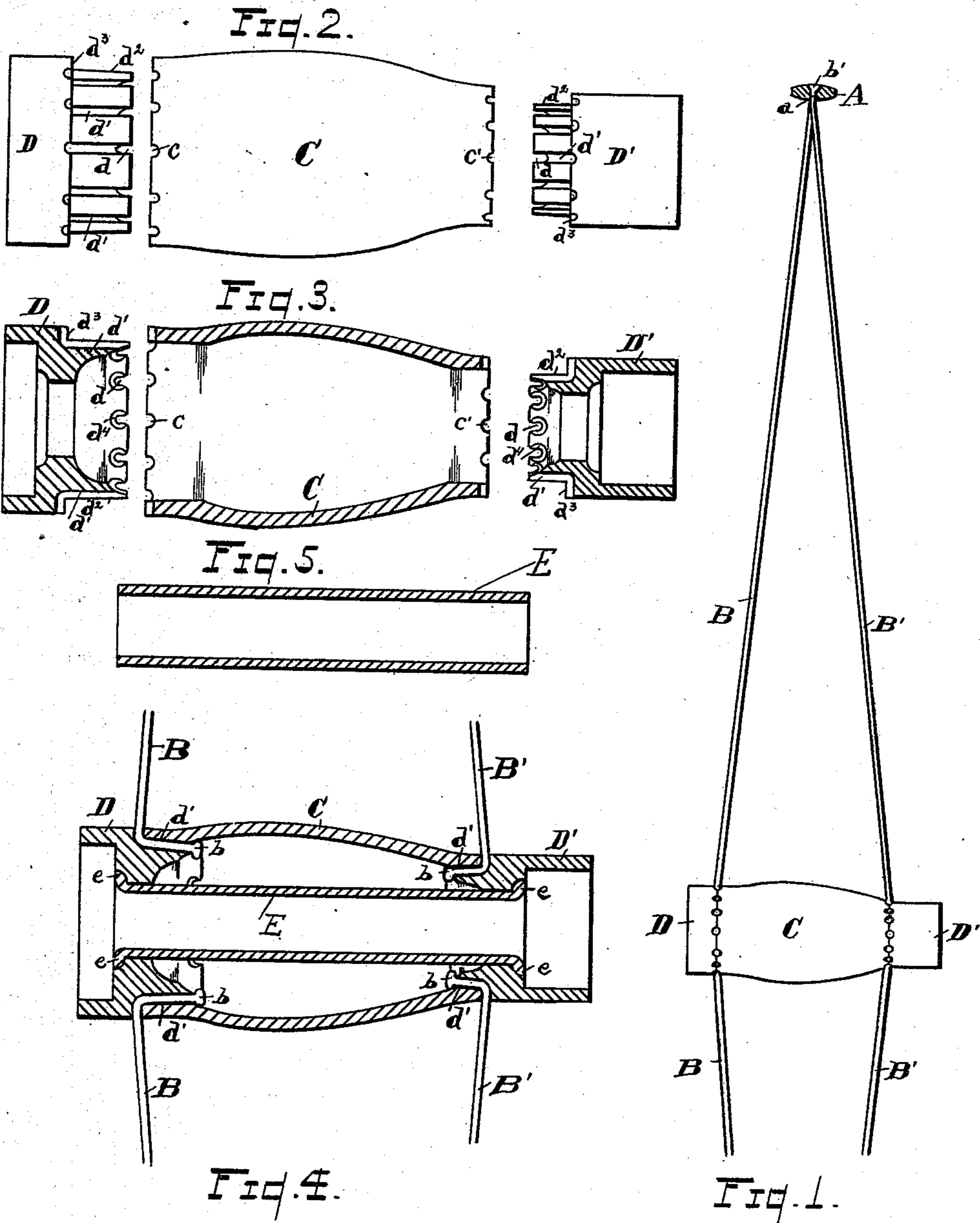


(No Model.)

C. E. MARK.
METALLIC WHEEL.

No. 413,949.

Patented Oct. 29, 1889.



WITNESSES
W. S. Murphey
L. A. Dueltz

INVENTOR
Charles E. Mark
By Wells W. Leggett & Co.
Attorneys.

UNITED STATES PATENT OFFICE.

CHARLIE E. MARK, OF FLINT, MICHIGAN, ASSIGNOR TO THE MARK METAL WHEEL COMPANY, OF SAME PLACE.

METALLIC WHEEL.

SPECIFICATION forming part of Letters Patent No. 413,949, dated October 29, 1889.

Application filed March 2, 1889. Serial No. 301,770. (No model.)

To all whom it may concern:

Be it known that I, CHARLIE E. MARK, a citizen of the United States, residing at Flint, county of Genesee, State of Michigan, have invented a certain new and useful Improvement in Metallic Wheels; and I declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention has for its object the provision of a novel construction of metallic wheel which shall be cheaply constructed and of great strength.

In the drawings, Figure 1 represents a section of the wheel. Fig. 2 is a side elevation of the hub before the spokes are inserted. Fig. 3 is a sectional view through the hub. Fig. 4 is a sectional view after the spokes have been inserted and the caps pressed into place. Fig. 5 is a detail view of the thimble or core.

In carrying out my invention, A represents the rim, B B' the spokes, and C the hub, of my improved wheel. I will now proceed to describe the manner of constructing the same.

The spokes B B', &c., all cut to the same length, are first headed on one end *b*. The other end is then passed through orifices *a* in the rim and headed, as at *b'*. The ends *b* are then laid in the recesses *c c'* in the ends of the hub, each alternate spoke—as, for instance, B—passing to one end of the hub, while the adjacent spoke B' extends to the other end. Caps or end pieces D D', having the recesses *d* in their ends and corresponding longitudinal grooves *d'* on their peripheries, are then placed against the ends of the hub, the recesses *d* embracing the spokes. The diameter of the caps D D' at the ends *d²*, which meet the ends of the hub, is such that the

former will snugly fit within the latter and the ends of the hub come to a bearing against the shoulder *d³*. The caps or end pieces are now pressed into the end of the hub, and the headed ends *b*, being engaged in the recesses *d*, are drawn in tightly, as shown in Fig. 4, the wires lying in the grooves *d'*. A thimble or core E is then inserted into the hub and the metal at the ends upset, as at *e*, thus firmly holding the caps or end pieces in place. This thimble or core also serves as bearing for the axle. By this means of securing a tension on the spokes the latter are evenly and securely clamped and the hub is exactly centered, since the spokes are all the same length and the tension on each one is practically the same. I have herein shown one end of the hub slightly smaller than the other end, and when this is done the grooved flange *d²* of the cap, which fits into the smaller end, will be correspondingly narrowed, so that an equal tension will be exerted on each one of the wires.

The particular shape of the hub is of course immaterial, and any form would be contemplated by my invention.

The inner surface of the caps around the recesses *d* may, if desired, be countersunk, as at *d⁴*, to receive the headed ends of the spokes.

What I claim is—

In a metallic wheel, the combination, with the hub and caps or end pieces adapted to enter the ends of said hub, of spokes engaged between said caps or end pieces and hub, and having headed ends lying in recesses in the inner ends of said caps or end pieces, substantially as described.

In testimony whereof I sign this specification in the presence of two witnesses.

CHARLIE E. MARK.

Witnesses:

W. H. CHAMBERLIN,
L. A. DOELTZ.