

(No Model.)

J. R. LITTLE.
METHOD OF MANUFACTURING METAL WHEELS.

No. 409,474.

Patented Aug. 20, 1889.

Fig. 1.

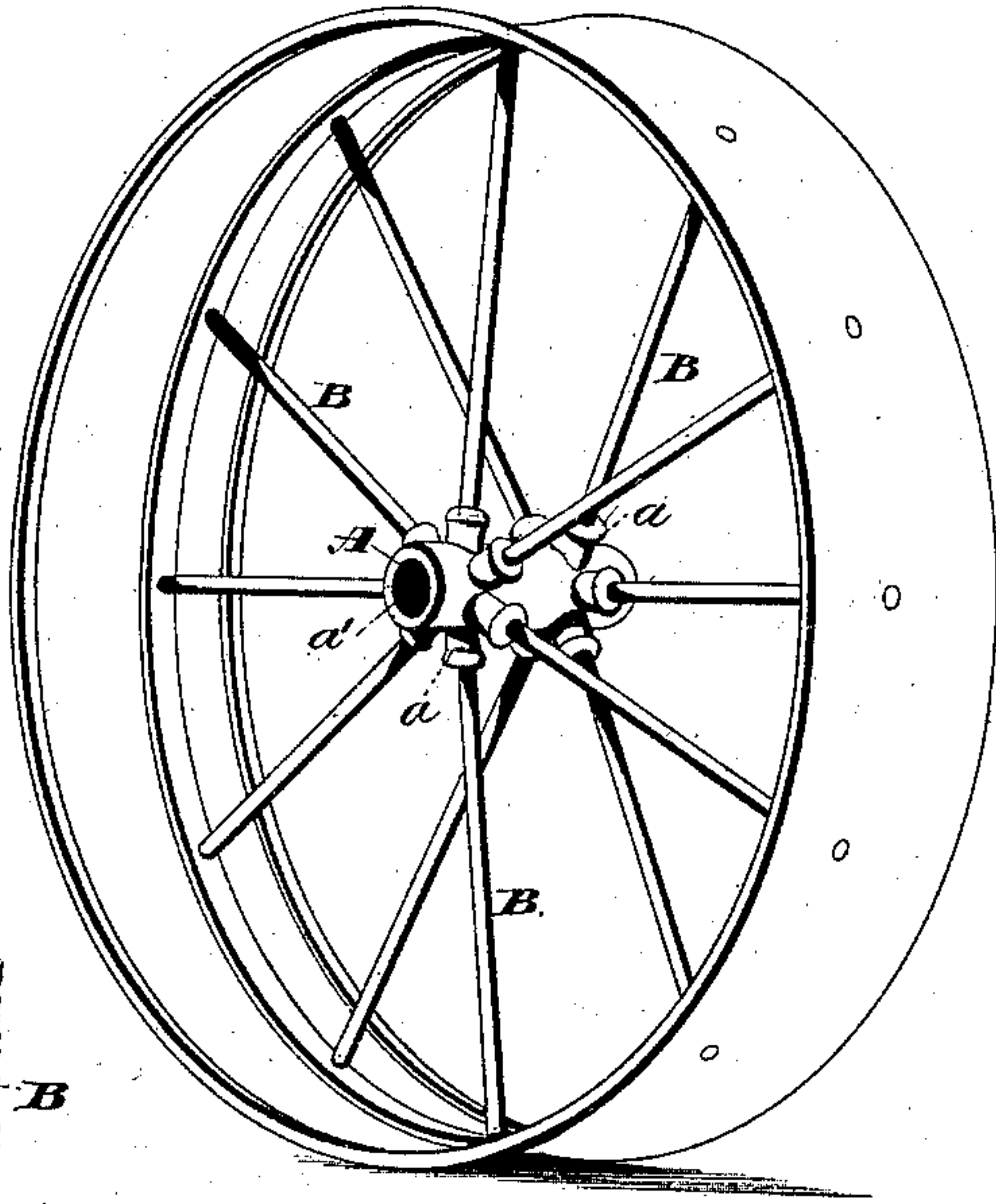


Fig. 2.

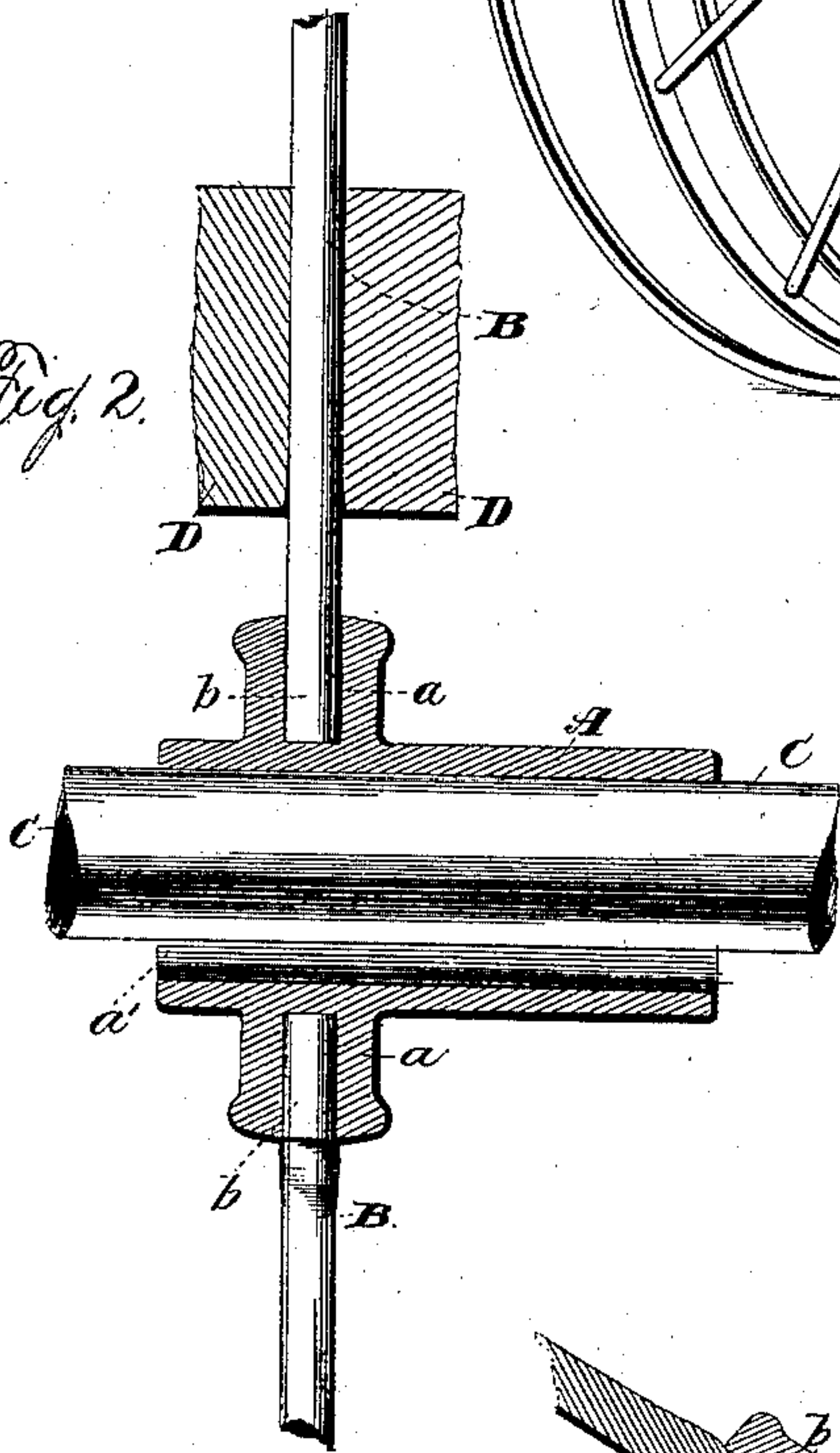


Fig. 3.

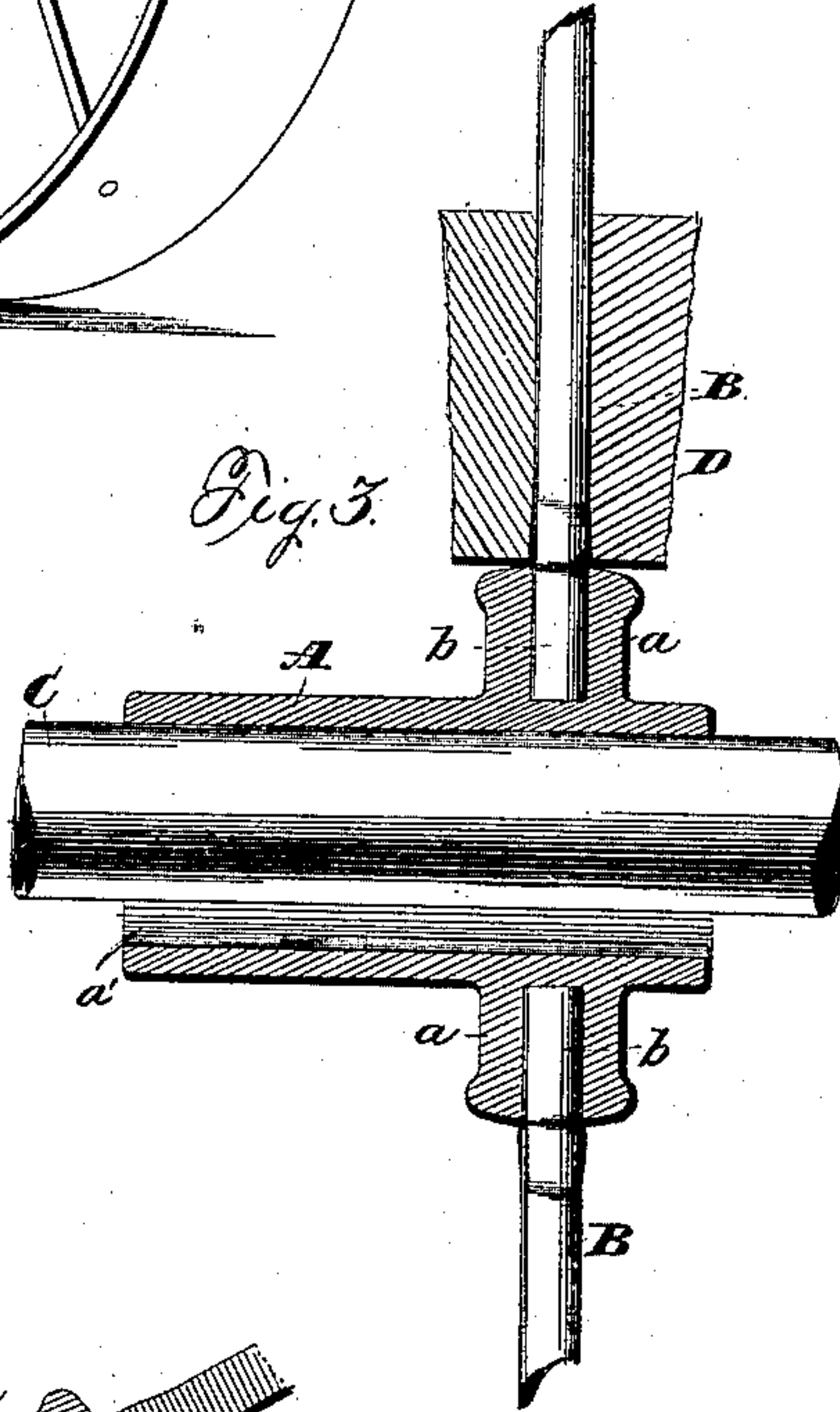
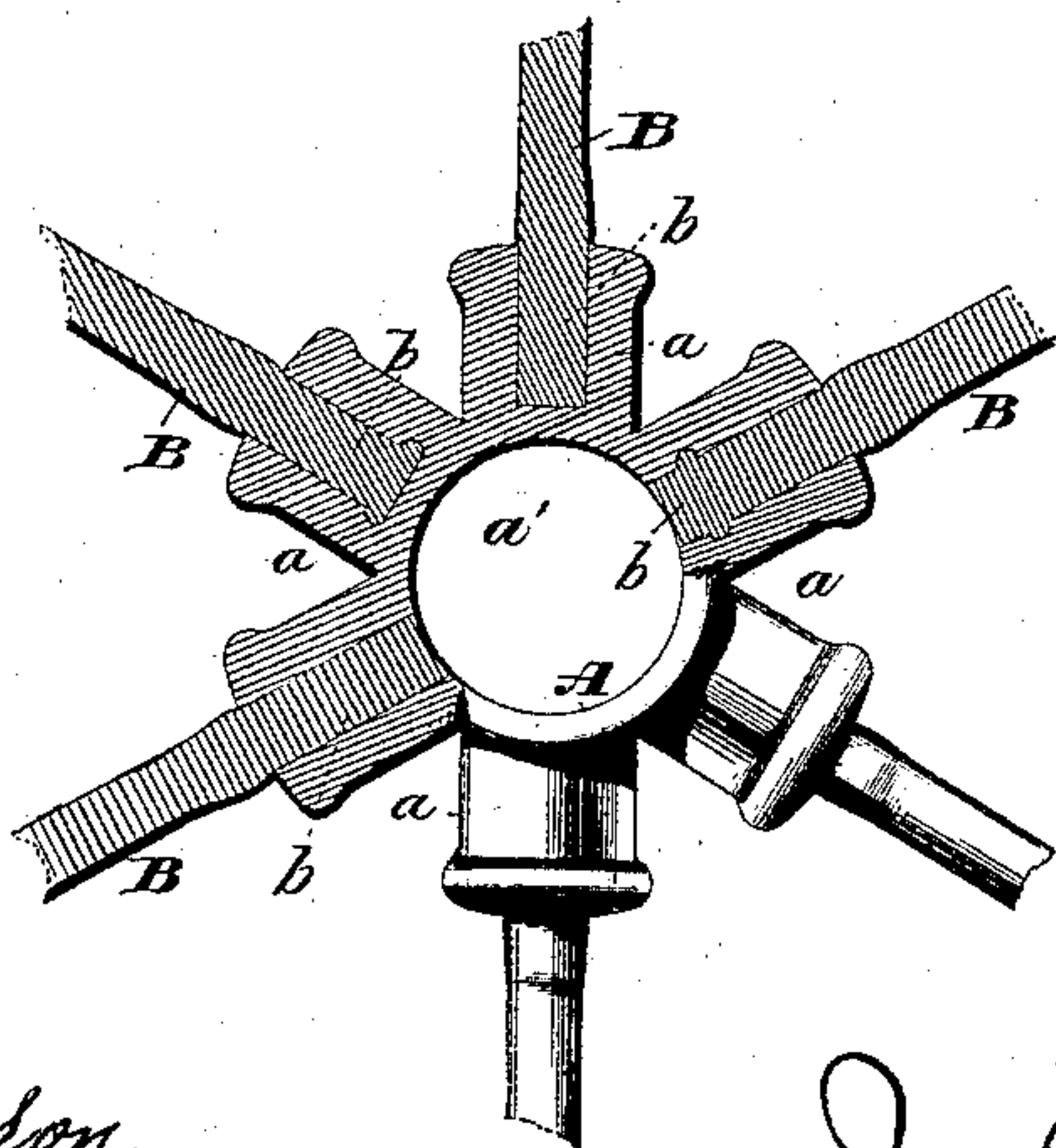


Fig. 4.



Witnesses
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UNITED STATES PATENT OFFICE.

JAMES R. LITTLE, OF QUINCY, ILLINOIS, ASSIGNOR TO THE QUINCY METAL WHEEL COMPANY, OF SAME PLACE.

METHOD OF MANUFACTURING METAL WHEELS.

SPECIFICATION forming part of Letters Patent No. 409,474, dated August 20, 1889.

Application filed April 24, 1889. Serial No. 308,377. (No model.)

To all whom it may concern:

Be it known, that I, JAMES R. LITTLE, of Quincy, in the county of Adams, and in the State of Illinois, have invented certain new and useful Improvements in the Method of Manufacturing Metal Wheels; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of a wheel constructed in accordance with my improved method. Fig. 2 is an enlarged side elevation of a spoke and a longitudinal section of the hub as cast thereon, and shows the dies and mandrel employed for enlarging said spoke within its mortise. Fig. 3 is a like view of the same after the enlarging operation has been effected; and Fig. 4 is a cross-section of the hub and a longitudinal section of some of the spoke-tenons, showing the form of tenon preferably used and modifications in the form of such tenon.

Letters of like name and kind refer to like parts in each of the figures.

The design of my invention is to enable the spokes and hub of a metal wheel to be easily, cheaply, and firmly united; and to this end my said invention consists in the method employed, substantially as and for the purpose hereinafter specified.

In the carrying of my invention into practice I combine a cast-metal wheel-hub A and wrought or malleable metal spokes B and B by casting the former upon the ends of the latter, care being had that the spokes are properly centered within the radial equidistant bosses *a* and *a*, that are provided for their reception.

The spokes are preferably arranged so that their inner ends or tenons *b* and *b* do not extend quite into the axial opening *a'* of the hub A, and said tenons are preferably plain and straight; but, if desired, the latter may terminate at or within said opening, and each may, if desired, be provided with a peripheral enlargement, as shown in Fig. 4. When the hub and spokes are thus united by casting the former upon the latter, some of the joints are firm and apparently strong, while others are loose, and by use will constantly become worse, until the wheel is worthless, there being no certainty as to the production of a close joint by such method. To remedy such defects, I place the hub A upon a properly-

supported mandrel C, preferably arranged horizontally, and by means of a pair of clamping-jaws D and D successively grasp each spoke B at a point a short distance from where it enters its boss *a*, and by a movement of said jaws and mandrel toward each other, or of either of said parts toward the other, compress longitudinally and expand laterally that portion of the spoke which is between until it is caused to firmly and entirely fill the mortise and to have an increased diameter immediately outside of the same. The method employed secures such intimate and forcible contact between the tenon and mortise as to practically unite or weld their contiguous surfaces, and no amount of ordinary use of the wheel will destroy or impair the joints so constructed, while by casting the hub upon the spokes a material saving in expense is effected over what would be involved by the drilling of the mortises and the insertion and subsequent enlargement therein of the spoke-tenons.

Having thus described my invention, what I claim is—

1. The method of uniting the hub and spokes of a metal wheel, which consists in casting the hub upon the inner ends of the spokes and afterward enlarging each of the latter within the former, substantially as and for the purpose specified.

2. The method of uniting the hub and spokes of a metal wheel, which consists in casting the hub upon and around the inner ends or tenons of the spokes, and then by longitudinal compression enlarging such tenons within their mortises, substantially as and for the purpose shown.

3. The method of uniting the hub and spokes of a metal wheel, which consists in casting the hub upon and around the inner ends of the spokes, and then by the longitudinal compression of the inner portion of said spoke expanding the same within and immediately outside of said hub, substantially as and for the purpose set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 19th day of April, 1889.

JAMES R. LITTLE.

Witnesses:

P. B. WILLIAMS.

J. O. GLENN.