(No Model.)

2 Sheets—Sheet 1.

R. S. CARR.

WHEEL.

No. 300,046. Patented June 10, 1884.

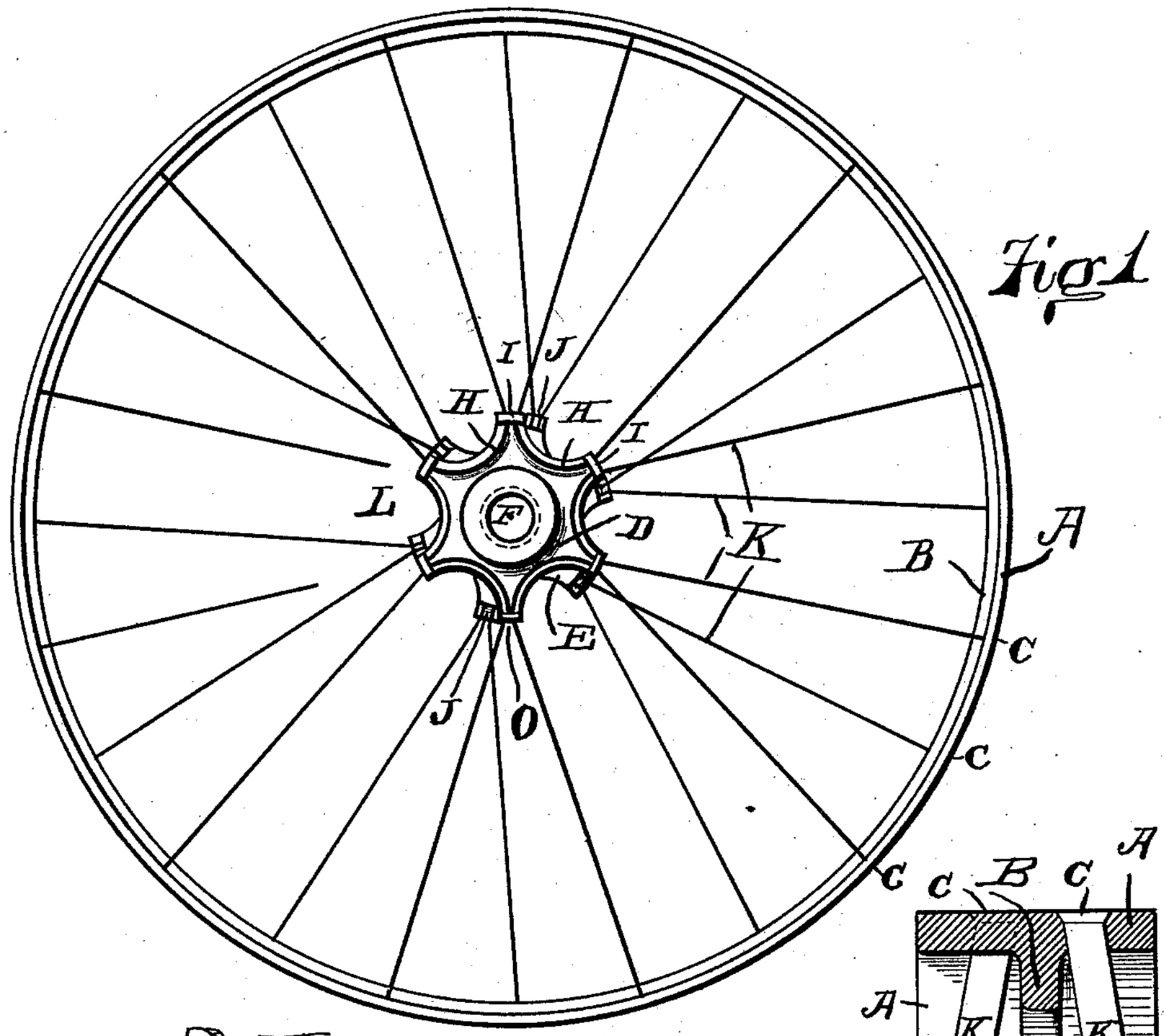

Fig 1

Fig 2

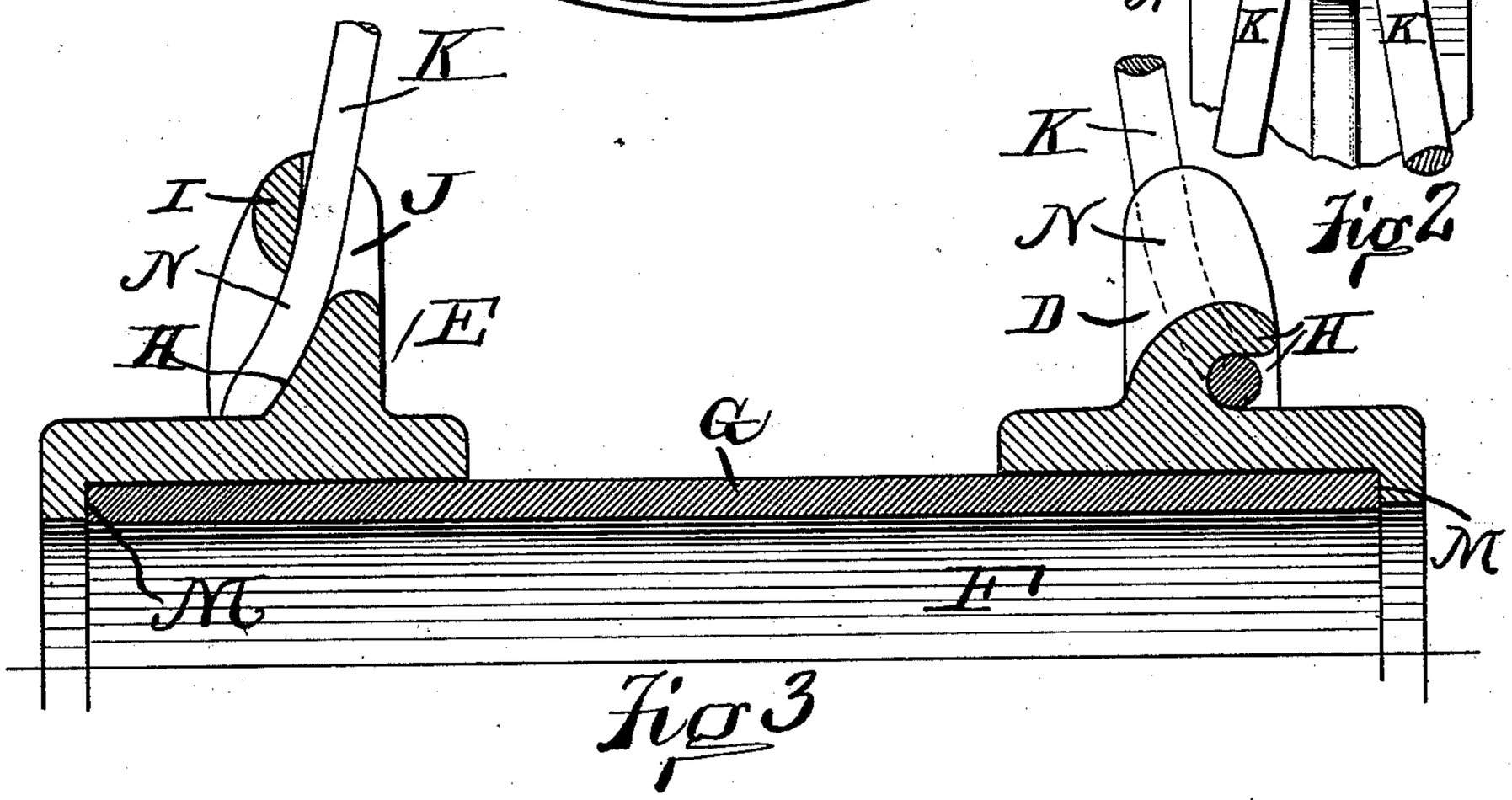

Fig 3

Witnesses:
Wa Seward
Jno. Lorenz

Robert S. Carr Inventor
by James N. See
Attorney

(No Model.)

2 Sheets—Sheet 2.

R. S. CARR.

WHEEL.

No. 300,046.

Patented June 10, 1884.

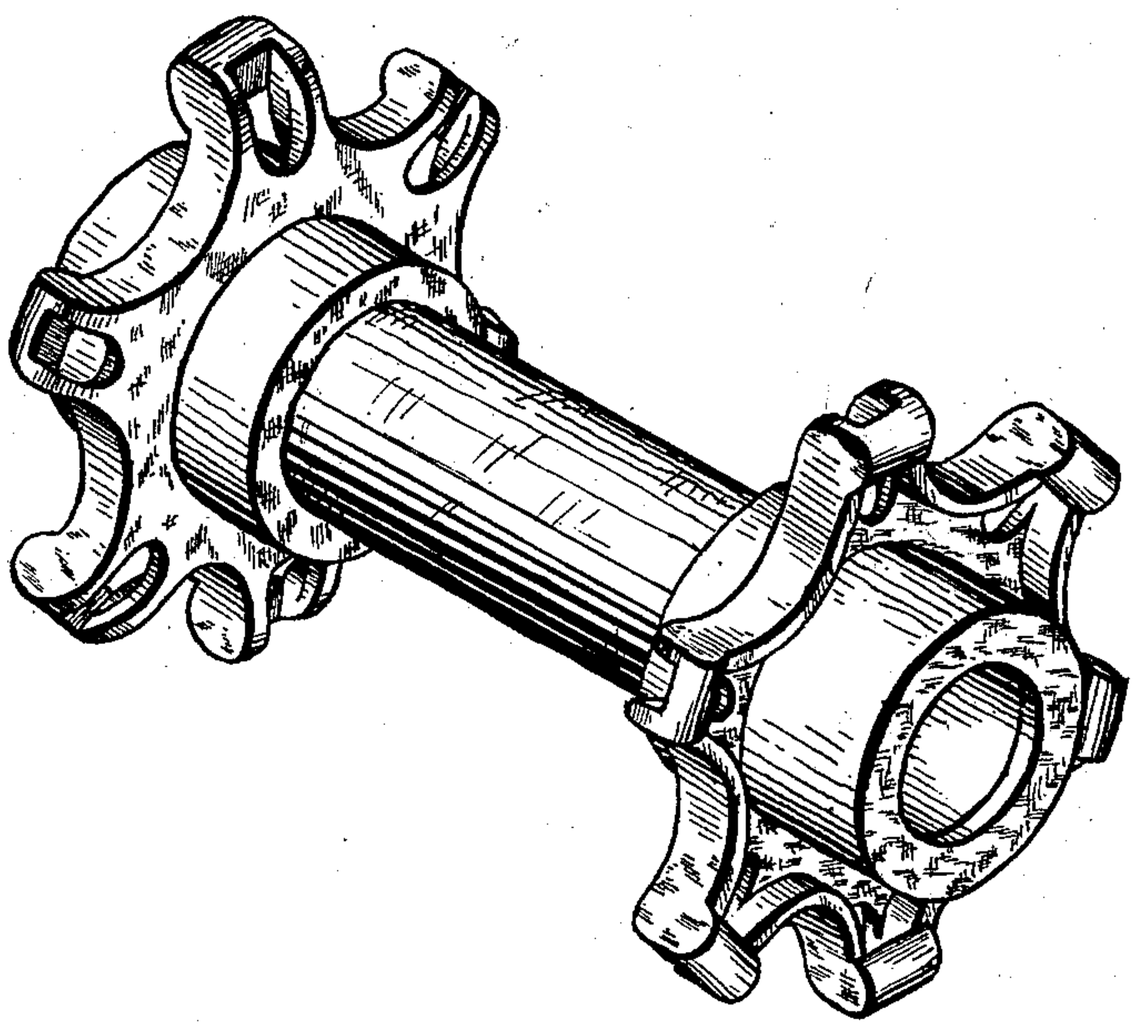

Fig 4

Witnesses:
W. A. Seward.
C. D. Mathes.

Robert S. Carr
Inventor
by James N. See
Attorney

UNITED STATES PATENT OFFICE.

ROBERT S. CARR, OF HAMILTON, OHIO.

WHEEL.

SPECIFICATION forming part of Letters Patent No. 300,046, dated June 10, 1884.

Application filed February 4, 1884. (No model.)

To all whom it may concern:

Be it known that I, ROBERT S. CARR, of Hamilton, Butler county, Ohio, have invented certain new and useful Improvements in Wheels, of which the following is a specification.

This invention pertains to that class of wire-spoked wheels which may be generally classed as "suspension-wheels" by reason of the vertical strains of the wheel being met by the tensile strength of the spokes above the hub.

The invention relates to the peculiarities of the hub, as will be fully understood from the following description, taken in connection with the accompanying drawings, in which—

Figure 1 is a side view of a wheel embodying my improvements; Fig. 2, a transverse section of the tire; Fig. 3, a diametrical section of the hub, and Fig. 4 a perspective view of the hub.

In the drawings, D and E represent hub-spiders fitted to receive the wire spokes. M are internal inwardly-facing shoulders within the hub-spiders; G, a tube fitted within the hub-spiders and engaging against the shoulders M. F is the interior of the tube, forming the bore of the hub. The spokes have the usual side spread from the tire to the hub, and the strain of the spokes tends to draw the hub-spiders toward each other, and thus maintain them in proper position.

K represents the spokes, which consist of wires attached at each end to the tire by riveting or otherwise, and having a central bend near the center of the wheel, where they engage the hub-spiders. The radius of the center bend of the spoke-wires is so great as to bring the bends into contiguity—that is, the bends practically touch each other. It follows, of course, that the spokes are not radial, but tangent to a small circle concentric with the wheel. The hub-spiders are provided with a circumferential series of outwardly-projecting segmental lips, H, adapted to engage with the bends of the spoke-wires, and the lips of the series are arranged as close to each other as possible, leaving only room for the passage between them of two spoke-wires, as will be readily understood from the drawings. Two separate spoke-wires enter this small space between contiguous lips, spread a piece under the lips, and pass outward through succeeding spaces. The spaces between adjacent lips are closed in front, at the bend where the wires enter, by front bars, I, cast upon the face of the hub-spiders. These front bars furnish an extra safeguard against the spoke-wires being displaced from the lips. The openings by which the spoke-wires enter the spiders are thus upon the periphery of the hub-spider, and the hub-spiders have openings J cast in their rear faces opposite the front bars, which permit the casting of the peripheral openings without the necessity of coring.

In the manufacture of the wheels the separate spoke-wires are closed somewhat, so that the two ends of one wire may be inserted horizontally, or nearly so, through the openings J. The wires K, after being thus inserted, are turned up vertically, which brings the bends into engagement with the lips, and the outer ends are allowed to again spread to suit the spacing in the tire. The front bars, I, are set backward somewhat farther than the side spread of the spokes would naturally permit. The consequence is that when the spokes, after being inserted horizontally into the spider, are turned up vertically, they exert a lever-like strain against the rear faces of the front bars. This strain is so great that when the spokes are brought into line in the tire their inner portions take a side bend, as clearly shown in Fig. 3 of the drawings, in which it will be seen that the spoke represents a lever fulcrumed behind the front bar, and seating firmly with its extreme bend against the inner face of the hub-spider, and that this strain of the spoke results in the flaring side bend, N. This side bend insures a firm contact between the bend of the spoke and the front faces of the hub-spiders, as well as a firm contact between the front faces of the spokes and the rear faces of the front bars. It will be noticed that this structure permits the avoidance of sharp bends in the spoke-wires; that it avoids the necessity for bolted keepers at the hub-spider without involving sharp corner bends, and that it permits the exercise of a peculiar system of manufacture, the spoke-wires being dropped horizontally through the openings in a hub-spider and then straightened outward to the tire.

I claim as my invention—

1. The combination of a tire, spoke-wires se-

cured at each end to the tire, and each forming two spokes joined by a central bend, with its convexity toward the center of the wheel, and hub-spiders provided with a circumferential series of segmental lips arranged with their extremities contiguous, so as to form a space for the reception of two spokes, and having front bars closing the front of the segmental lips at their points of approach, substantially as and for the purpose set forth.

2. The combination of a tire, hub-spiders provided with a circumferential series of segmental lips, and with front bars at the contiguous extremities of the lips, and spoke-wires having a central bend to enable them to enter and leave the spider, and having also a side bend within the hub-spider, substantially as and for the purpose set forth.

3. The combination of a tire, a series of wire spokes, a hub-tube, and a pair of spoke-receiving spiders fitted upon the ends of the hub-tube and engaging against the ends of the tube, substantially as and for the purpose set forth.

ROBERT S. CARR.

Witnesses:
J. W. SEE,
W. A. SEWARD.