

C. F. CRAVER & J. M. WISHART.
Driving-Wheel.

No. 212,663.

Patented Feb. 25, 1879.

Fig. 1.

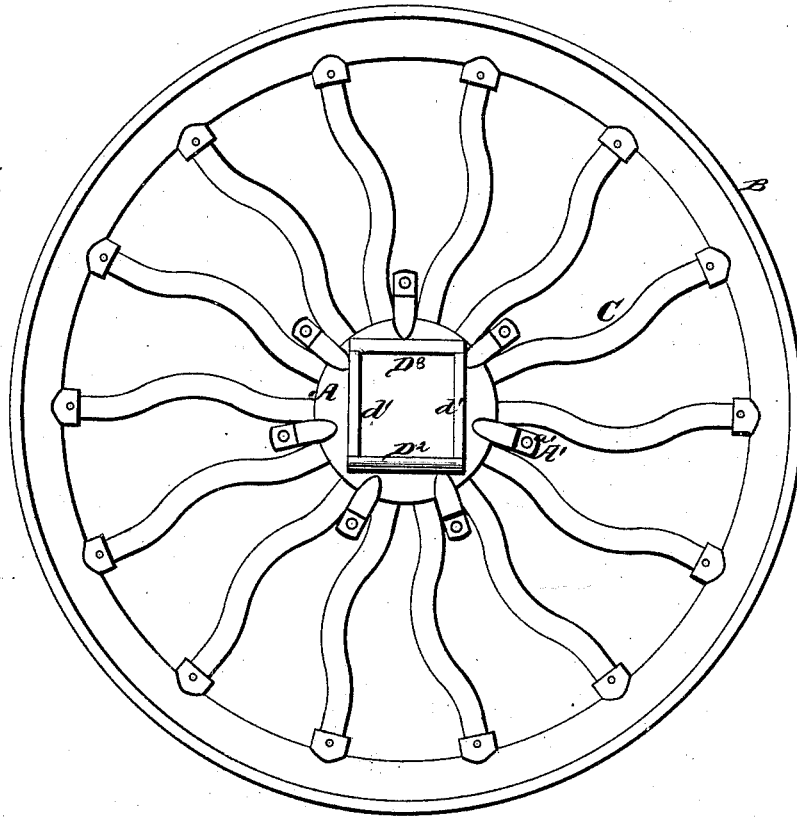
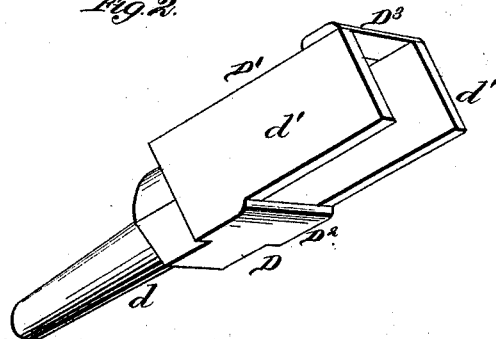


Fig. 2.



WITNESSES
Robert Emmett
A. Clay Smith

INVENTORS.
Charles F. Craver
James M. Wishart
By *Gibbons, Smith & Co.* ATTORNEYS.

UNITED STATES PATENT OFFICE.

CHARLES F. CRAVER AND JAMES M. WISHART, OF GRINNELL, IOWA.

IMPROVEMENT IN DRIVING-WHEELS.

Specification forming part of Letters Patent No. **212,663**, dated February 25, 1879; application filed December 21, 1878.

To all whom it may concern:

Be it known that we, CHARLES F. CRAVER and JAMES M. WISHART, of Grinnell, in the county of Poweshiek and State of Iowa, have invented a new and valuable Improvement in Drive-Wheels; and we do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a side elevation of our drive-wheel, and Fig. 2 is a perspective view of the metal axle.

Our improvement relates to driving-wheels for locomotives and the like, or a driving-wheel for machinery; and the novelty consists in the construction and arrangement of parts, as will be more fully hereinafter set forth.

In carrying out our invention we construct our improved driving-wheel with the hub and rim of cast-iron, and cast into these parts the spokes, which are of hollow wrought-metal pipes.

Cast with the hub are radial arms, the outer ends of which are perforated or otherwise formed to receive securing-bolts, which connect the master-wheel thereto.

Heretofore difficulty has been experienced in casting wrought-iron spokes into cast hubs and rims, the parts not forming solid welding-joints because of the solid cold wrought-iron chilling the molten cast-iron at these points. We overcome this difficulty by employing spokes of hollow wrought-metal pipe, which fuses readily with the cast metal and forms a rigid joint. Said spokes are light, elastic, and have sufficient strength for the purpose.

Heretofore the strain of the running machin-

ery or power has been directly on the spokes of the wheel, the master-wheel being secured thereto or formed in one therewith. This we deem deleterious in its results; and to avoid it we cast in one piece with the hubs radial arms, to which the master-wheel is secured in any desirable manner.

Referring to the drawings, A represents the hub, of cast metal, having cast in one therewith the radial arms A', with securing device a', to receive the master-wheel. (Not shown.) B designates the rim of the driving-wheel, of cast metal, and C the curved wrought-iron spokes, of hollow pipe metal, as shown. These spokes are cast with the hub A A' a' and the rim B, and form a rigid wheel.

D represents the metal axle, having spindle d, upon which the wheel is secured, and upon which it revolves. A box, D¹, is cast in one therewith, having closed sides d' and open top and bottom. Upon the outer end, next the spindle, is a cross-plate, D², and upon the upper inner end is a cross-plate, D³.

The parts are all cast in one, and the sides d' d' and plates D² D³ form a socket-bearing for a wooden axle. (Not shown.)

What we claim as new, and desire to secure by Letters Patent, is—

The hub A, having radial arms A' a', in combination with the spokes C and rim B, as specified, for connecting the drive-wheel with a master-wheel, as set forth.

In testimony that we claim the above we have hereunto subscribed our names in the presence of two witnesses.

CHAS. F. CRAVER.
JAS. M. WISHART.

Witnesses:

ROBERT M. HAINES,
FRANK V. MILLS.