

(No Model.)

J. T. BRIDGES.  
CAR WHEEL.

No. 466,988.

Patented Jan. 12, 1892.

Fig. I.

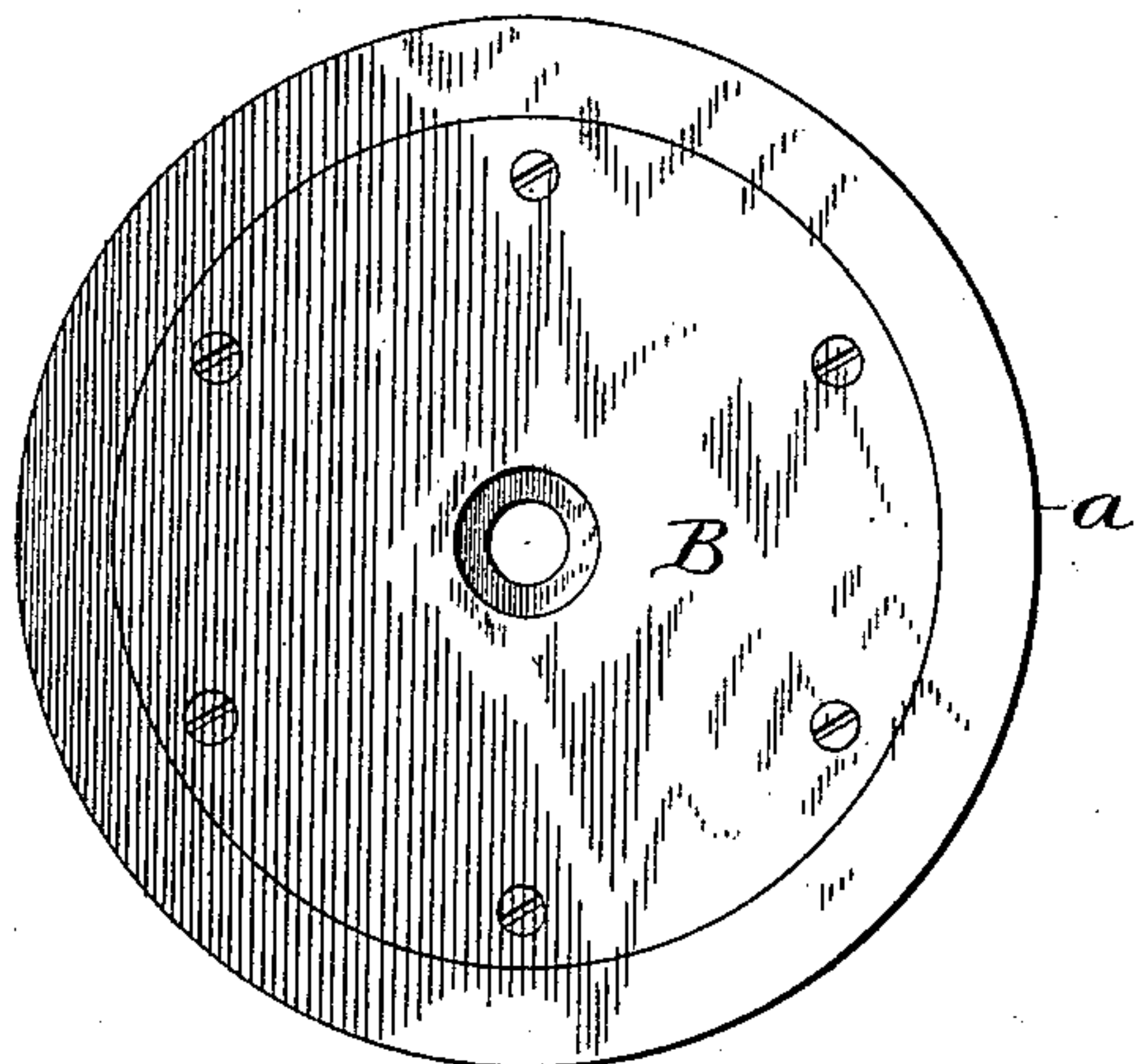


Fig. II.

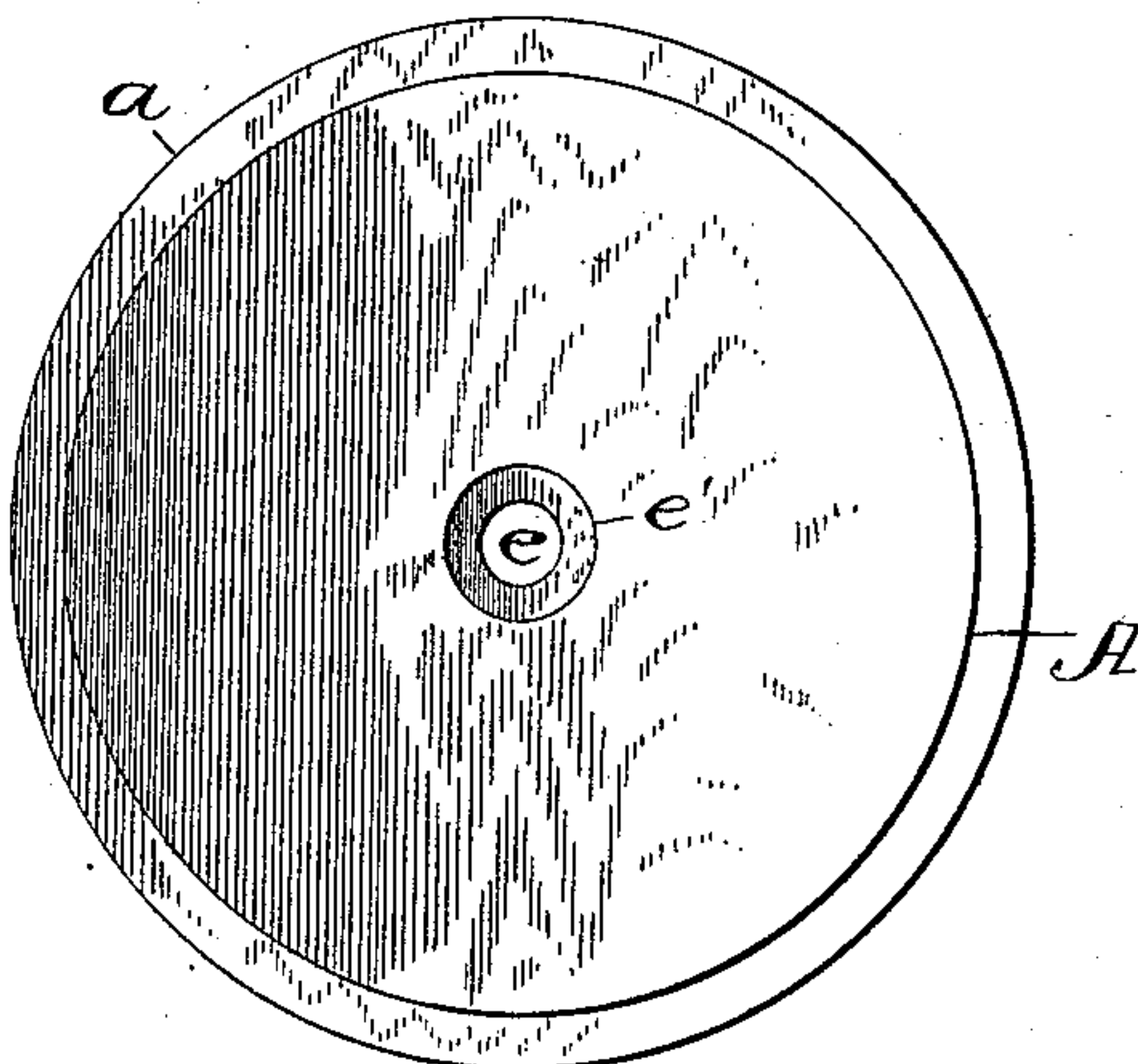


Fig. III.

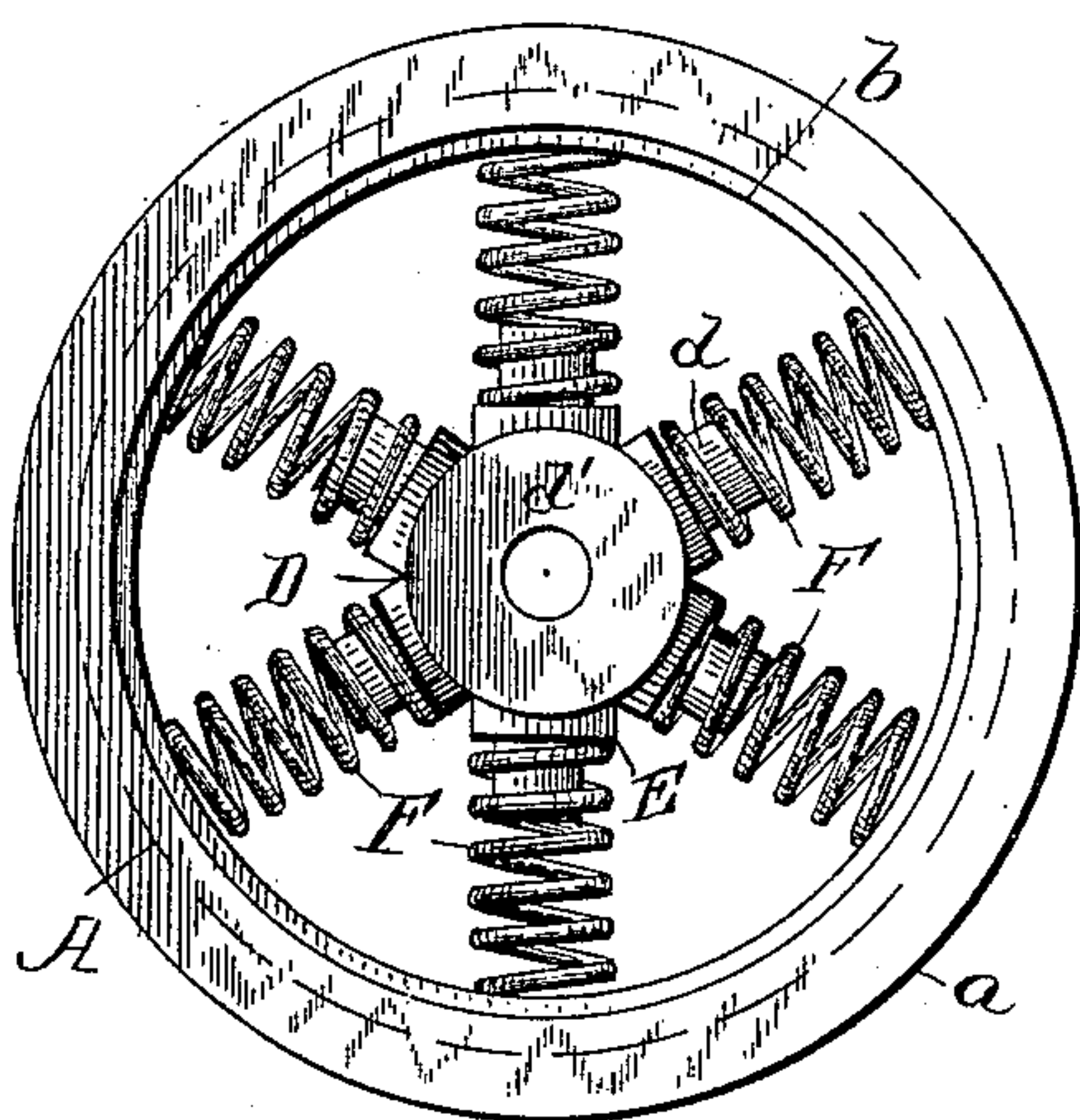


Fig. IV.

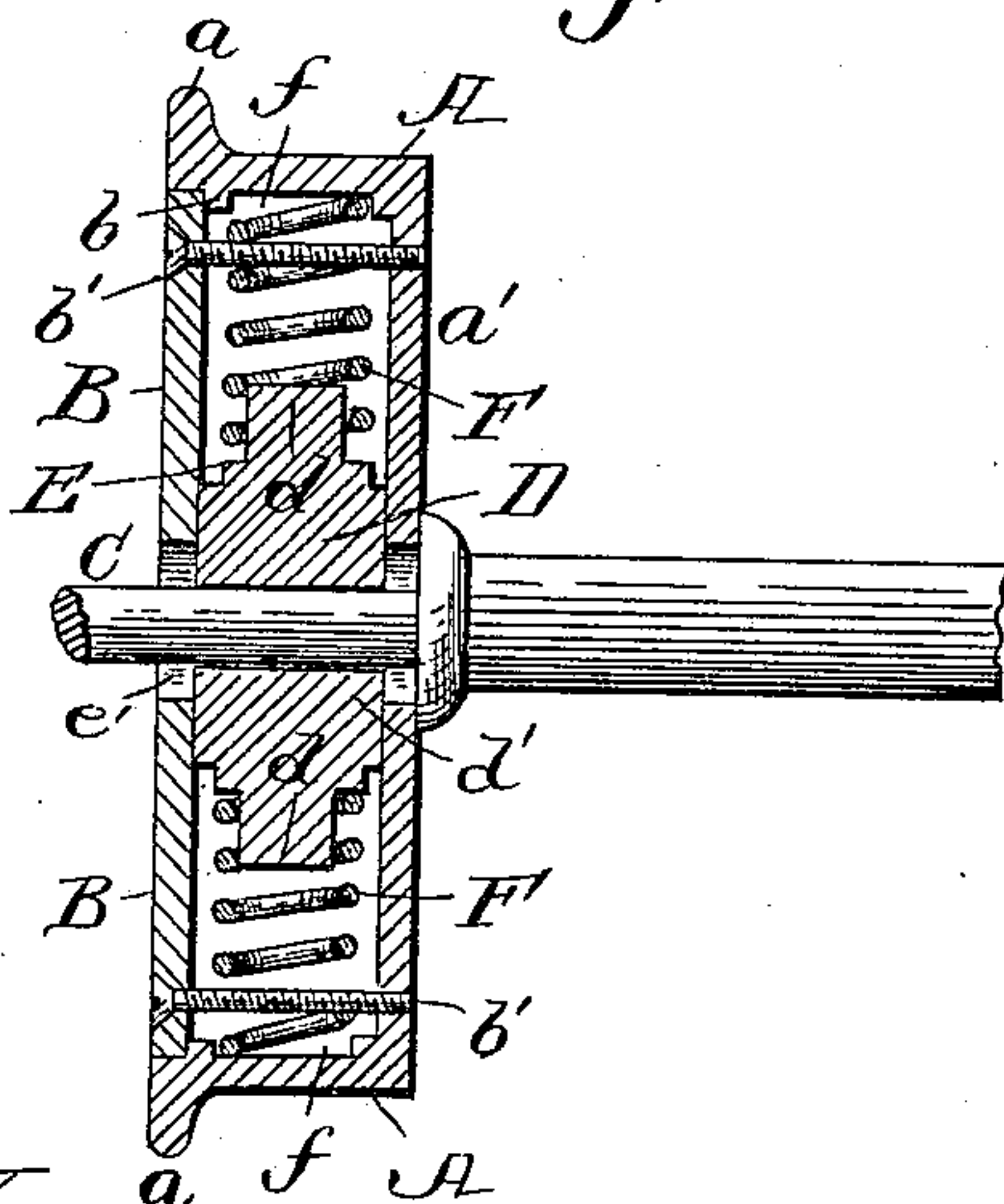
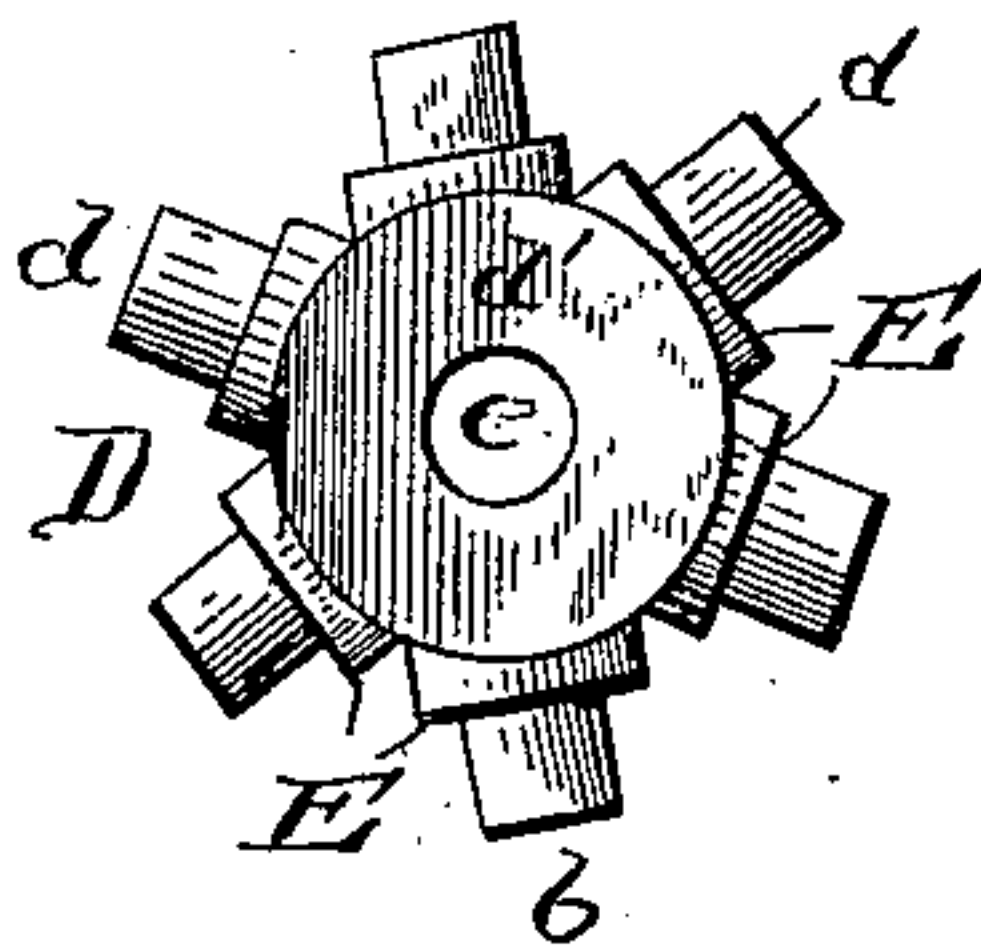


Fig. V.



Witnesses:

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James T. Bridges,  
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# UNITED STATES PATENT OFFICE.

JAMES T. BRIDGES, OF HAGERSTOWN, MARYLAND.

## CAR-WHEEL.

SPECIFICATION forming part of Letters Patent No. 466,988, dated January 12, 1892.

Application filed September 14, 1891. Serial No. 405,603. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES T. BRIDGES, a citizen of the United States, residing at Hagerstown, in the county of Washington and State of Maryland, have invented certain new and useful Improvements in Car-Wheels; and I do hereby 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 appertains to make and use the same.

My invention relates to improvements in car-wheels; and it has for its object to provide the wheels with means for insuring an easier carriage or movement of the car-axle and body and to relieve the parts in a great measure of the usual jarring and jolting when the train is in motion.

With these and other ends in view my invention consists of a wheel having the usual tread and the flat inner side and a chamber within the tread which is closed by a removable face-plate rigidly secured in an annular seat formed on the inner side of the tread at the outer edge thereof. Within this chamber is arranged a spider frame or casting which forms a bearing for the axle, and the spider fits snugly between the integral side and the removable face-plate of the wheel, said spider being provided with an opening to receive the axle, on which the spider is shrunk. Openings are also provided in the inner side and removable plate, and they are of greater diameter than the opening in the casting to permit of yielding movement of the spider-frame on the axle. The radial arms of the spider-frame are of sufficient length to receive the inner ends of coiled springs and to permit the requisite play of the casting which forms the bearing for the axle. To retain the springs in proper position, they are preferably fitted in recesses on the inner side of the tread on the wheel, and their inner ends bear against shoulders on the radial arms of the spider-frame.

My invention further consists of certain details of construction and arrangement of parts, as will more fully appear hereinafter.

In the accompanying drawings, Figure I is an elevation of the inner side of the wheel. Fig. II is a similar view of the outer side. Fig. III is an elevation of the wheel with the plate on the inner side thereof removed to show the

interior arrangement. Fig. IV is a sectional view taken on the line  $x x$  of Fig. II, and Fig. V is a detail view of the casting which forms the bearing.

Like letters of reference denote corresponding parts in all the figures of the drawings.

The wheel is provided with the usual tread A and the flange  $a$ . On the inner side is a flat plate  $a'$ , which extends in a vertical direction at right angles to the tread of the wheel and forms the inner side of the wheel. A chamber B is formed within the wheel, the tread being formed comparatively thin, and a removable plate C is arranged to fit snugly against a shoulder  $b$  formed on the inner side of the tread, just out of line of the flange  $a$ , to close the chamber. This plate is flush with the edges of the wheel and forms a continuation of the flange, and it is secured rigidly in place against the shoulder  $b$  by bolts  $b'$ , which extend across the wheel and are screwed into the inner side  $a'$ , or they may pass entirely through said inner side and be secured by nuts, as desired. The sides of the wheel are parallel to each other, and are preferably arranged to lie flush with the edges of the tread and flange to present the contour and shape of an ordinary wheel and make it more durable and capable of sustaining heavy loads.

Within the chamber B is placed a spider-frame D, which forms a bearing for the journal of the axle. This spider-frame is constructed with a series of radial arms  $d d$ , which extend in various directions from the enlarged hub  $d'$ . These arms are each provided, preferably, with shoulders E at or near their point of juncture to the hub, and a journal-bearing  $e$  is made in the center of the hub to receive the journal of the axle. Openings  $e' e'$  are also provided in the removable plate C and the inner side  $a'$ , and these openings are of greater diameter than the opening in the casting to permit the axle and the casting to have a limited movement. The axle-journal  $c$  is arranged to fit snugly within the opening  $e$  in the casting, and as the openings  $e' e'$  are of greater diameter than the axle the latter may have a limited movement within the wheel while in motion, which will relieve the car from the customary jarring.

On the projecting ends of the radial arms



5 the springs F are fitted, and they bear  
 against the shoulders E thereon. These  
 springs are preferably made of coiled steel;  
 but it is obvious that other forms of springs  
 10 may be used with equally good results, and  
 the tread may be made thicker or thinner to  
 vary the size of the springs, as desired. The  
 springs extend across the wheel to the inner  
 side of the tread, and the outer ends may  
 15 be seated or fitted in recesses f, formed in  
 the tread, as shown in Fig. IV. This con-  
 struction or arrangement of parts retains the  
 casting and springs in their proper relative  
 positions and permits the casting or bearing  
 20 to have the desired movement within the  
 wheel, it being arranged to fit snugly between  
 the two sides of the wheel and slide easily in  
 this position. A bolt b' is provided for each  
 spring, and it passes through the outer end  
 thereof and serves to hold the spring in place  
 and at the same time bolt the wheel together.

The construction and operation of my im-  
 proved wheel may be readily understood  
 from the foregoing description taken in con-  
 25 nection with the drawings. In railway-cars  
 and other heavy vehicles the jarring and jolt-  
 ing usual in fast traveling are often very de-  
 structive to the articles transported, and are  
 very disagreeable to passengers; but a car  
 30 provided with wheels as herein described  
 will be relieved of this constant jar and jolt,  
 as the springs intermediate of the tread of  
 the wheel and axle serve to prevent any un-  
 due motion being communicated in this di-  
 35 rection to the car.

While this wheel is designed specially as a  
 car-wheel to be made entirely of metal, I may  
 also adapt it for many other vehicles by  
 slight changes in the form and construction,  
 40 as for traction-engines, which require heavy  
 wheels. The number of radial arms on the  
 yielding spider-frame may be increased or  
 diminished, as proves more desirable.

Although I prefer to construct my improved

wheel substantially as herein shown and de- 45  
 scribed, still I am aware that changes in the  
 form and proportion of parts and details of  
 construction can be made without departing  
 from the spirit or sacrificing the advantages of  
 my invention, and I therefore reserve the 50  
 right to make such changes as fall within the  
 scope of my invention.

Having thus fully described my invention,  
 what I claim as new, and desire to secure by  
 Letters Patent, is—

1. A wheel having the tread, a chamber 55  
 formed within the same, the removable plate,  
 and the spring-supported spider forming a  
 bearing for the journal and arranged in said  
 chamber, substantially as and for the purpose 60  
 set forth.

2. A wheel having the straight inner side  
 and the removable plate forming the outer  
 side and arranged relatively to each other to  
 form a chamber within the wheel, the spider- 65  
 frame having the radial arms within said  
 chamber, and the springs on said arms, sub-  
 stantially as and for the purpose set forth.

3. A wheel having the chamber formed  
 therein, the spider-frame arranged within 70  
 said chamber and having a series of radial  
 arms, and the springs fitted on said arms and  
 having their other ends seated in recesses in  
 the wheel, substantially as described.

4. A wheel having the straight inner side 75  
 and the removable plate forming a chamber  
 within the same, the spring-supported spider  
 within said chamber and having the journal-  
 bearing, and the openings in the inner side  
 and removable plate, substantially as de- 80  
 scribed.

In testimony whereof I affix my signature in  
 presence of two witnesses.

JAMES T. BRIDGES.

Witnesses:

HENRY E. COOPER,  
 WILLIAM O. BELT.