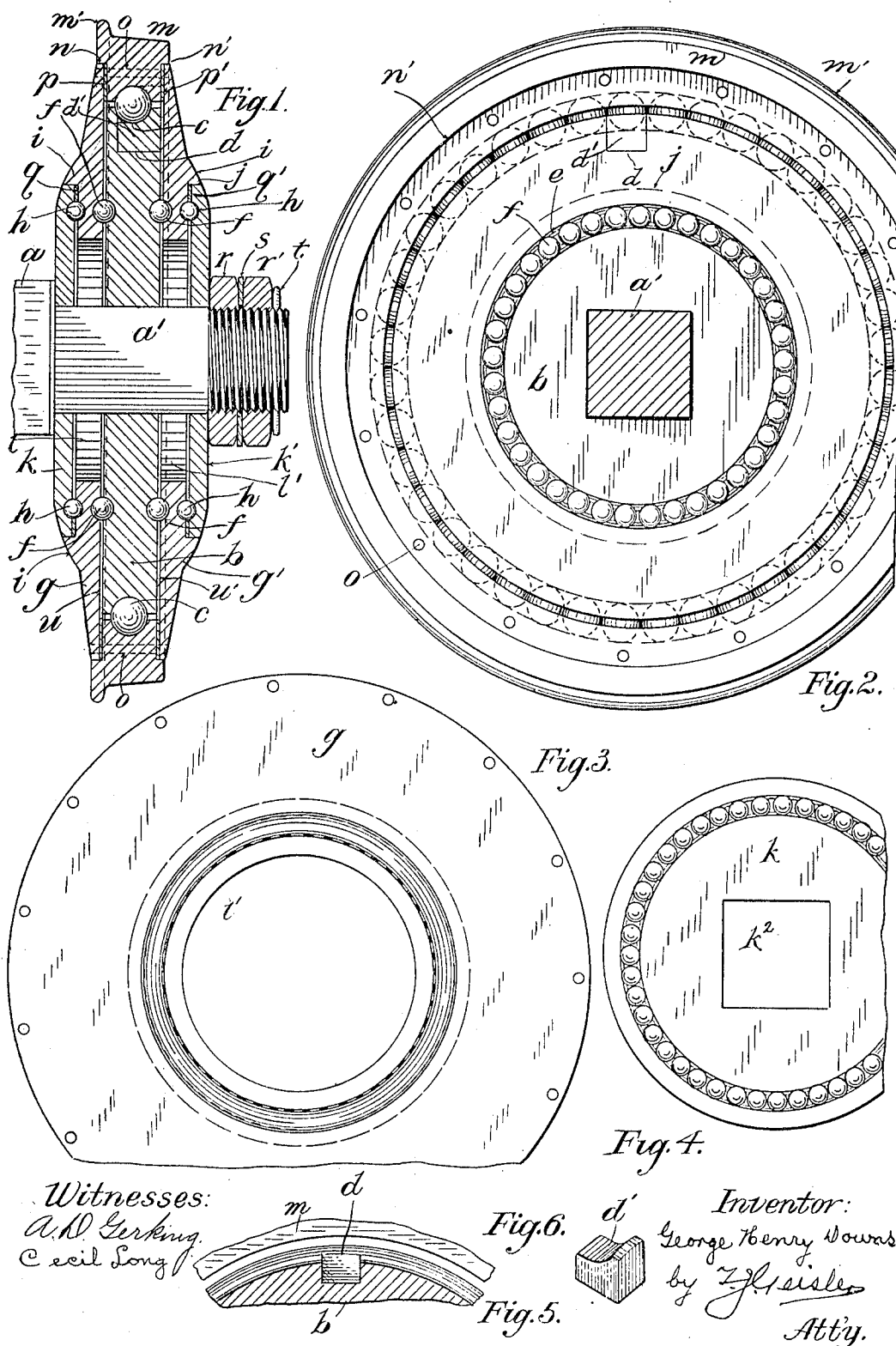


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CAR WHEEL.
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947,435.

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UNITED STATES PATENT OFFICE.

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CAR-WHEEL.

947,435.

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To all whom it may concern:

Be it known that I, GEORGE HENRY DOWNS, a citizen of the United States, and a resident of North Powder, Union county, State of Oregon, have invented a new and useful Improvement in Car-Wheels, of which the following is a specification, reference being had to the accompanying drawings as constituting a part thereof.

This invention, while relating more particularly to car-wheels, also applies to vehicle-wheels in general.

It has for its object to obtain an efficient ball-bearing wheel comprising, in its broad sense, a ring-like tread, rotating upon the periphery of a circular web, non-rotatably mounted on an axle-end, sides holding the tread in place, bearing-balls interposed in an effective way between the bearing or opposed faces of the fixing and moving parts, and chambers for lubricant, all arranged as hereinafter more fully described and to accomplish the purposes set forth.

I obtain my object by the combination of parts illustrated in the drawings referred to, in which,

Figure 1 is a diametric section of my improved car-wheel; Fig. 2 is a side elevation thereof with the near side plates removed so as to disclose the hub-like web of my wheel; Fig. 3 is a partial elevation of one of the annular members of such side plates; Fig. 4 is an inner side view of one of the outer circular members of said side plates which overlaps and closes the central opening of the annular member of said plates; and Figs. 5 and 6 are details of construction more fully explained in the body of this specification.

It is in the first instance to be noted that the shouldered-end of the axle *a*, corresponding to the usual journal end of a common car-axle, is made square in cross section, because my wheel is so constructed that the hub of the wheel does not rotate, but instead thereof the rim or ring-like tread, *m*, of the wheel rotates upon the hub. The web-like hub, *b*, of my wheel is provided on its rim with a groove in which to receive bearing-balls *c*. To admit of the insertion of the bearing-balls, *c*, the web, *b*, is made with an opening, *d*, closed by a piece *d'*, of which details are shown in Figs. 5 and 6. On either side of the web, and spaced therefrom, are circular side plates *k*, *k'*, and between such

outer circular plates and the web are annular side plates *g*, *g'*, the rims of the latter projecting beyond the periphery of the web. The outer faces of the web *b* are respectively made with annular grooves *e*, concentric with the axis of the wheel, in which to receive bearing-balls *f*, and the inner faces of the annular side plates *g*, *g'* are likewise made with annular grooves, corresponding with the grooves *e*, in which to receive said bearing-balls *f*. Said annular side plates *g*, *g'* are further provided on their outer faces with annular grooves in which to receive bearing-balls *h*. The outer circular side plates *k*, *k'* overlap the inner edges of the annular side plates *g*, *g'* and they are made with corresponding grooves on their inner faces for said bearing-balls *h*. The annular side plates *g*, *g'* are made with sloping portions *i* and shoulders *j*, leaving recesses on their outer faces, in which are seated the rims of the circular side plates *k*, *k'*. The cut-away central portions *l* of the annular side plates *g*, *g'* are spaced from the axle-end *a'*, while the eye of the web *b* is made square, so as to be rigidly mounted on such axle-end *a'*. The circular side plates *k*, *k'* are also made with rectangular eyes *k²*, so as to be rigidly mounted on the axle-end *a'*.

Encompassing the rim of the web *b* between the annular side plates *g*, *g'* in the ring-like tread *m*, made with the usual flange *m'* and shoulders *n*, *n'*, in which to receive the rims of said annular side plates *g*, *g'*, as shown in the sectional Fig. 1. The ring-like tread *m* is bolted by bolts *o* between the rims of said annular side plates *g*, *g'*. It is preferable to introduce some packing strips at *p*, *p'*, *q*, *q'*, to keep out dust. The extremity of the axle-end *a'* is threaded so as to receive nuts *r*, *r'*, an intermediate washer *s*, and a cotter-pin *t*, or like contrivances, to securely hold the wheel in place. The manner of assembling the parts of my wheel is self evident from the foregoing description, and particularly from the diametric section thereof shown in Fig. 1.

Before putting on the outer one of the circular outer side plates *k*, *k'*, the cavities provided by the cut-out portions *l* is filled with lubricant, which, passing along the crevices *u*, *u'*, reaches the grooves of the bearing-balls *c*, *f*, *h*. It is preferable to fill said cavity *l* about half full with lubricant,

and this will provide ample lubrication for a considerable length of time, though the car provided with my wheels be in continuous use.

5 I claim:

1. In combination with an axle-end, a wheel comprising a circular web non-rotatably mounted on the axle-end, outer circular side plates also non-rotatably mounted
10 on the axle-end on either side of the web and laterally spaced therefrom, annular side plates between the web and the circular side plates, the central portions of the annular side plates being cut away so as to be spaced
15 from the axle-end and thus provide chambers for lubricant, the rims of the annular side plates projecting beyond the periphery of the web, and the rims of the circular side plates overlapping the inner edge of said
20 annular side plates, a ring-like tread rotatably mounted on the periphery of the web between the projecting rims of the annular side plates, bearing balls between the opposed faces of the side plates and the periphery of the web and said rim-like tread,
25 and means securing the wheel on the axle-end.

2. In combination with an axle-end, a wheel comprising a circular web non-rotatably mounted on the axle-end, outer circular side plates also non-rotatably mounted
30 on the axle-end on either side of the web and laterally spaced therefrom, annular side plates between the web and the circular side plates, the central portions of the annular side plates being cut away so as to be spaced
35 from the axle-end and thus provide chambers for lubricant, the rims of the annular side plates projecting beyond the periphery of the web, and the rims of the circular side plates overlapping the inner edge of said
40 annular side plates, means rotatably interlocking the rims of the outer circular side plates with the inner portions of the intermediate annular side plates, a ring-like tread
45 rotatably mounted on the periphery of the web between the projecting rims of the annular side plates, bearing balls between the opposed faces of the side plates and the periphery of the web and said rim-like tread,
50 and means securing the wheel on the axle-end.

3. In combination with an axle-end, a wheel comprising a circular web non-rotatably mounted on the axle-end, outer circular side plates also non-rotatably mounted
55 on the axle-end on either side of the web and laterally spaced therefrom, annular side plates between the web and the circular side plates, the central portions of the annular side plates being cut away so as to be spaced
60 from the axle-end and thus provide chambers for lubricant, the rims of the annular side plates projecting beyond the periphery of the web, said annular side plates being

formed with annular recesses near their inner edges, and the rims of the circular side plates overlapping and setting in such recesses, a ring-like tread rotatably mounted
70 on the periphery of the web between the projecting rims of the annular side plates, bearing balls between the opposed faces of the side plates and the periphery of the web and said rim-like tread, and means securing the wheel on the axle-end.

4. In combination with an axle-end, a wheel comprising a circular web non-rotatably mounted on the axle-end, outer circular side plates also non-rotatably mounted
80 on the axle-end on either side of the web and laterally spaced therefrom, annular side plates between the web and the circular side plates, said annular side plates being rigidly secured to the rim of the web, the central portions of the annular side plates being cut
85 away so as to be spaced from the axle-end and thus provide chambers for lubricant, the rims of the annular side plates projecting beyond the periphery of the web, and the rims of the circular side plates overlapping
90 the inner edge of said annular side plates, a ring-like tread rotatably mounted on the periphery of the web between the projecting rims of the annular side plates, bearing balls between the opposed faces of the side plates
95 and the periphery of the web and said rim-like tread, and means securing the wheel on the axle-end.

5. In combination with an axle-end, a wheel comprising a circular web non-rotatably mounted on the axle-end, outer circular side plates also non-rotatably mounted
100 on the axle-end on either side of the web and laterally spaced therefrom, annular side plates between the web and the circular side plates, said annular side plates being rigidly secured to the rim of the web, the central portions of the annular side plates being cut
105 away so as to be spaced from the axle-end and thus provide chambers for lubricant, the rims of the annular side plates projecting beyond the periphery of the web, and the rims of the circular side plates overlapping
110 the inner edge of said annular side plates, means rotatably interlocking the rims of the outer circular side plates with the inner portions of the intermediate annular side plates, a ring-like tread rotatably mounted on the
115 periphery of the web between the projecting rims of the annular side plates, bearing balls between the opposed faces of the side plates and the periphery of the web and said rim-like tread, and means securing the wheel on the axle-end.

6. In combination with an axle-end, a wheel comprising a circular web non-rotatably mounted on the axle-end, outer circular side plates also non-rotatably mounted
125 on the axle-end on either side of the web and laterally spaced therefrom, annular side

plates between the web and the circular side plates, said annular side plates being rigidly secured to the rim of the web, the central portions of the annular side plates being cut away so as to be spaced from the axle-end and thus provide chambers for lubricant, the rims of the annular side plates projecting beyond the periphery of the web, said annular side plates being formed with annular recesses near their inner edges, and the rims of the circular side plates overlapping and setting in such recesses, a ring-like tread rotatably mounted on the periphery of the web between the projecting rims of the annular side plates, bearing balls between the opposed faces of the side plates and the periphery of the web and said rim-like tread, and means securing the wheel on the axle-end.

7. In combination with a square-shouldered axle-end, a wheel comprising a circular web non-rotatably mounted on the axle-end, outer circular side plates also non-rotatably mounted on the axle-end on either side of the web and laterally spaced therefrom, annular side plates between the web and the circular side plates, the central portions of the annular side plates being cut away so as to be spaced from the axle-end and thus provide chambers for lubricant, the rims of the annular side plates projecting beyond the periphery of the web, and the rims of the circular side plates overlapping the inner edge of said annular side plates, a ring-like tread rotatably mounted on the periphery of the web between the projecting rims of the annular side plates, bearing balls between the opposed faces of the side plates and the periphery of the web and said rim-like tread, and nuts on the axle-end holding the wheel in place.

8. In combination with a square-shouldered axle-end, a wheel comprising a circular web non-rotatably mounted on the axle-end, outer circular side plates also non-rotatably mounted on the axle-end on either side of the web and laterally spaced therefrom, annular side plates between the web

and the circular side plates, said annular side plates being rigidly secured to the rim of the web, the central portions of the annular side plates being cut away so as to be spaced from the axle-end and thus provide chambers for lubricant, the rims of the annular side plates projecting beyond the periphery of the web, means rotatably interlocking the rims of the outer circular side plates with the inner portions of the intermediate annular side plates, a ring-like tread rotatably mounted on the periphery of the web between the projecting rims of the annular side plates, bearing balls between the opposed faces of the side plates and the periphery of the web and said rim-like tread, and nuts on the axle-end holding the wheel in place.

9. In combination with a square-shouldered axle-end, a wheel comprising a circular web non-rotatably mounted on the axle-end, outer circular side plates also non-rotatably mounted on the axle-end on either side of the web and laterally spaced therefrom, annular side plates between the web and the circular side plates, said annular plates being rigidly secured to the rim of the web, the central portions of the annular side plates being cut away so as to be spaced from the axle-end and thus provide chambers for lubricant, the rims of the annular side plates projecting beyond the periphery of the web, said annular side plates being formed with annular recesses near their inner edges, and the rims of the circular side plates overlapping and setting in such recesses, a ring-like tread rotatably mounted on the periphery of the web between the projecting rims of the annular side plates, bearing balls between the opposed faces of the side plates and the periphery of the web and said rim-like tread, and nuts on the axle-end holding the wheel in place.

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Witnesses:

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