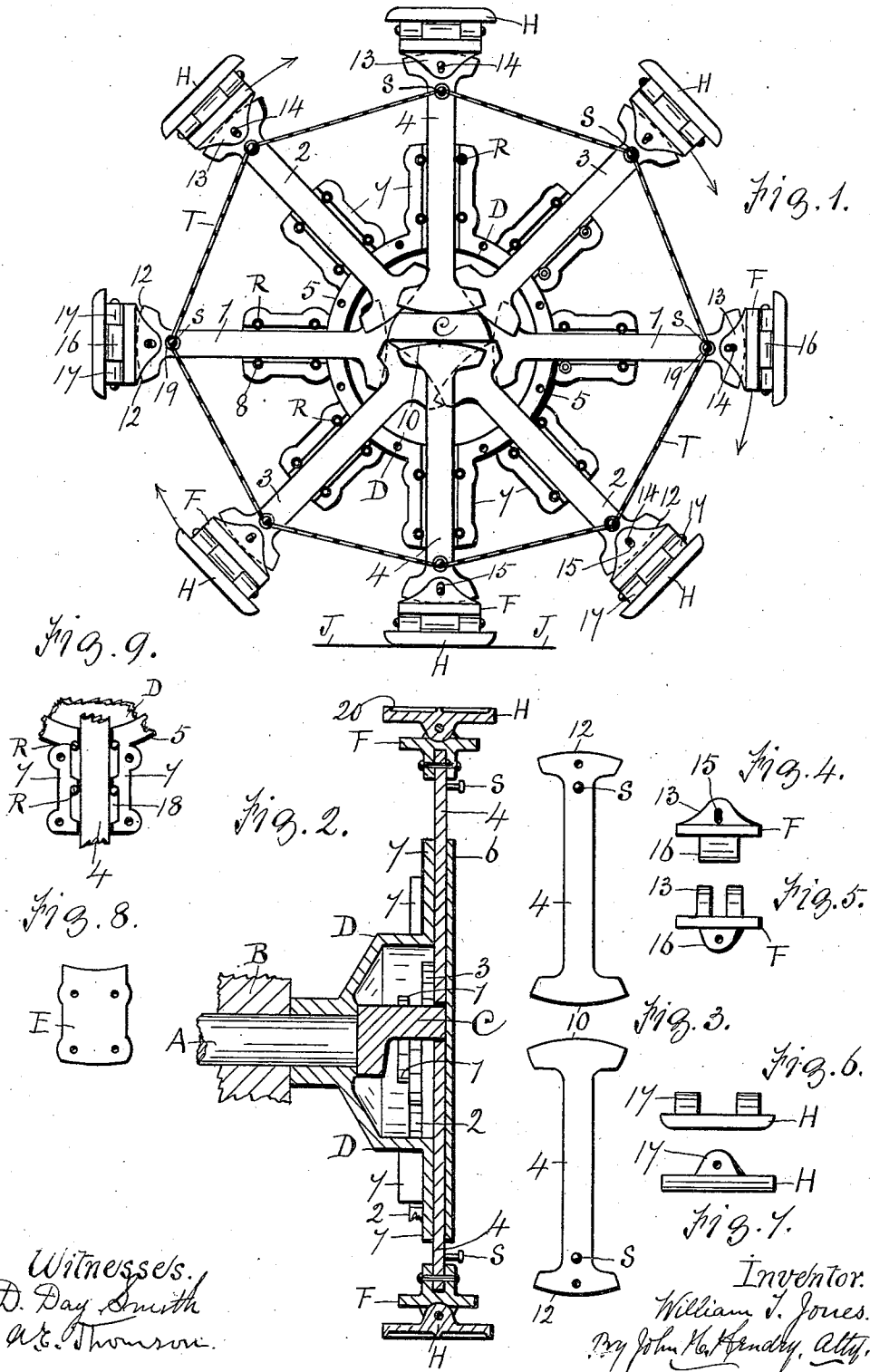


No. 856,259.

PATENTED JUNE 11, 1907.

W. T. JONES.
AMBULATORY WHEEL.
APPLICATION FILED NOV. 23, 1905.



UNITED STATES PATENT OFFICE.

WILLIAM T. JONES, OF HAMILTON, ONTARIO, CANADA.

AMBULATORY WHEEL.

No. 856,259.

Specification of Letters Patent.

Patented June 11, 1907.

Application filed November 23, 1905. Serial No. 288,658.

To all whom it may concern:

Be it known that I, WILLIAM T. JONES, a subject of the King of Great Britain, and a resident of Hamilton, in the county of Wentworth and Province of Ontario, Canada, have
5 invented new and useful Improvements in Ambulatory Wheels for Vehicles, of which the following is a specification.

My invention relates to improvements in
10 ambulatory wheels, in which a central stationary axle having a fixed stationary cam, a central hub, or casing adapted to revolve on the axle, and a certain number of legs, the ends of which are adapted to roll under-
15 neath and in contact with the cam, and slides in the casing, and certain shoes loosely connected to the opposite ends of said legs are used, all automatically operating in consecutive order.

The objects of my invention are first, to
20 provide an ambulatory wheel specially adapted for portable engines and vehicles of various kinds, second, to provide an ambulatory wheel with rolling and slidable legs, and
25 shoes connected thereto, which shall automatically adapt themselves to level and to uneven ground, third, to provide resilient means for tensioning the legs, to retain the same in proper and relative position one with
30 the other, and with a tendency to position the inner end of the legs to roll underneath and in contact with the cam of the axle, fourth, to afford facilities for the adjustment of the legs to position in the central casing,
35 and for the retaining of the same, yet with freedom of action and ambulatory power, and fifth, to reduce the power which is requisite to propel the wheel, and to obtain a more perfect traction. I attain these objects by
40 the mechanism illustrated in the accompanying drawing in which:—

Figure 1 is a side elevation of an ambulatory wheel, showing the central hollow tube, or casing, the centrally located axle cam, the
45 inner ends of the legs in contact with the under-side of the cam, and the radially extending guide seats for the legs, the cover of the casing, and the covers of the guide seats being removed. Fig. 2 is a sectional elevation through the central part of Fig. 1 of the
50 drawing with the casing cover secured thereon, and as viewed from the left-hand end of said Fig. 1 of the drawing. Fig. 3 is a side elevation of two legs, in vertical position
55 and as shown in Fig. 1 of the drawing. Fig. 4 is a side elevation of a detached pivotal

bracket of a hinged foot. Fig. 5 is an end elevation of the same. Fig. 6 is a side elevation of a detached hinged foot plate. Fig. 7
is an end elevation of the same. Fig. 8 is a side elevation of a cover for the guide seat-
60 ings of the legs, and Fig. 9 is a detail elevation and modification of a leg seating showing the leg rollers adapted to roll in recesses in the seating and independently of the bolts
65 which fasten the seating cover.

Similar letters refer to similar parts throughout the several views.

In the drawing, the stationary axle of a portable engine B, and the like, is indicated
70 by A, and C is a cam, or hip, which forms a part of the axle A, and above the center of the axle and rigid therewith. The cam C is of suitable shape and design to answer the purpose intended.

D, is the hollow circular hub, or casing, for
75 the ambulatory legs, and is adapted to revolve on the axle A. The casing D, has an outer annular flange 5 to which is bolted and secured an outer cover 6. A number of radial guide
80 seats 7, extend from the casing D, in diametrical form and order, and in pairs, each pair being on the same plane and line, and diametrically opposite to each other. To more
85 fully and to better describe the eight rollable and slidable legs, and the eight leg guide seats, as shown, I deem it expedient to indicate the first or inner pair of legs 1 and 1,
90 which are shown in Fig. 1 of the drawing in horizontal and diametrical line, and on the same plane and exactly opposite to each other. The next in order and similar pair of opposite
95 legs are indicated by 2, and 2; the next in order and similar pair of opposite legs by 3 and 3; and the next in order and outer similar pair of opposite legs, by 4 and 4. The outer
100 legs 4 and 4 are shown in vertical position in Figs. 1 and 2 of the drawing and are diametrically opposite to each other, and on the same plane.

The guide seatings 7, which extend diametrically from the casing D, and form a part
105 of the casing, are in pairs and the planes of each pair conform with each pair of opposite legs. The inner ends of the legs in the casing D, extend side wise, and are of suitable curve
110 and form 10 to roll underneath the cam C, which is intended to be of suitable form and shape to carry the vehicle at the same distance from the ground when in operation.

The sides of the legs in the casing are in contact with each other, that is, the inner

side of the legs 4 and 4, contact with the outer sides of the legs 3, and 3, the inner sides of the legs 3 and 3, contact with the outer sides of the legs 2 and 2, the inner sides of the legs 2, and 2, contact with the outer sides of the legs 1 and 1. The inner sides of all the legs engage with the seating 7. The depth of each seating 7 is the same as the thickness, or depth of the legs, all being similar, therefore, the outer sides of the legs are flush with the outer sides of the seatings. The cover 6, covers the casing D, and is bolted to the flange 5, of the casing, and extends to the ends of the opposite seatings 7, which contain the opposite and vertical legs 4. The cover 6, fits snugly to the legs 4 and also on the front sides of the opposite seats 7. The legs 1, 2 and 3, are also held in their seats by means of lesser covers E, which extend from the circular body part of the casing D, to the outer ends of the six seatings 7. All the seatings 7, have bolts 8, which bolt the covers 6, and E, to the seatings, and the cover 6 is secured to the casing. The seatings 7, are provided with rollers R, on the bolts 8, or may run loosely in recesses 18 in the sides of the walls of the seatings, and are adapted to roll against the edges of the legs, and revolve in their recesses or on the bolts 8, when the wheel is ambling along. It will be noticed in Fig. 1 of the drawing that the distance between the side walls of the seatings 7 is greater than the width of the legs, in order to allow the rollers R to roll against the legs to avoid friction when in operation thereby allowing a free and easy radial sliding motion to the legs.

The outer ends of the legs are side wise extended, and are of suitable curve 12 to roll on the pivotal ankle brackets F, having lugs 13 which are loosely pivoted to the outer ends of the legs at 14. The lugs 13 have slotted holes 15, to allow sufficient play of the brackets F, on the ends of the legs when the wheel is ambling, or walking. The hinged feet H, of the legs, have lugs 17, and the lower plate part of the brackets F, have lugs 16, which fit between the lugs 17, of the feet H, and hinge thereto, to allow sufficient play to the feet H, in order that the feet H, and the ankle brackets F, may have perfect freedom of action with the legs and with each other and may be termed a pivotal shoe on the outer end of each leg. The underside, or bottom of the foot H, has bold ribs or corrugations 20 to present a substantial bearing and rough grip, or hold, to prevent the foot from slipping on the ground J. The ambulatory wheel may walk in either direction. The outer ends of the legs are provided with suitable headed studs S secured thereto, and projecting out a suitable distance therefrom to allow a continuous steel band, or cable, around the studs, or around sheaves, or rollers 19 on the studs, as the case may be, and

to form a continuous endless loop T, adapted to operate loosely on said studs or rollers. The heads of the studs will retain the band T in position on the studs, and at the same time allow the band to change position when the legs are ambulating. The endless loop T is taut and brings all the legs in touch with one part of the cam C, and provides a certain stability and proper retaining tension to the legs, by the inherent resiliency of the band T.

It will be seen that the weight of the vehicle is sustained by the cam C which in turn is supported by the leg which rests upon the shoe upon the ground. Now it is evident that if the vehicle is propelled in either direction it will carry the cam with it, and the leg upon which the cam rests will rock in the direction in which the cam moves. This motion of the leg will revolve the case and carry the succeeding leg into position to receive the weight of the load upon the cam when the first leg will be relieved and raised up from the ground as the case rotates. This operation will be repeated as each leg comes into position under the cam as long as the vehicle continues in motion.

The operation of the ambulatory wheel is as follows: When the wheel as shown in Fig. 1 of the drawing is traveling in direction toward the right hand as indicated by arrows, and propelled by means of the stationary axle A, which is also traveling in the same direction, the legs 1, 2, 3 and 4, commence to exert themselves for walking, as all the legs are united together by means of the band T, and when one leg is affected by the ground J, then all are affected by the sensitiveness of the legs. When the lower leg 4, is leaving the ground the next leg 2 is coming in contact with the ground, then the next leg 1, and so on in succession and in consecutive order. The curved ends 10 of the legs are always in contact with the roll against one part of the cam C, thereby preventing any rattling of the wheel when ambulating.

The wheel may travel in either direction, and it is intended that the ambulatory wheel shall take the place of ordinary road circular wheels, to a certain extent, especially where more power is required, when drawing heavy loads.

What I claim as my invention and desire to secure by Letters Patent, is:—

1. In an ambulatory wheel, a stationary axle, a cam on the end of the axle, a casing, capable of revolving on said axle and around said cam, radial legs in the casing and extending through the same and adapted to slide therein, the ends of the legs curved and in contact with the cam, resilient means on the legs to produce said contact, and shoes loosely connected to the opposite ends of the legs.

2. In an ambulatory traction wheel, the combination with legs having curved end

faces, of feet having a loose connection with the legs and on which the curved end faces bear.

3. In an ambulatory wheel, a stationary
5 axle, a cam on the axle, a casing adapted to revolve on the axle, slidable legs in the casing and extending through the casing; radial seatings on the casing to support the legs, rollers in the seatings in contact with the
10 legs, the inner ends of the legs in contact with the cam, means on the legs to produce said contact, and covers on the casing and seatings to confine the legs.

4. In an ambulatory traction wheel, the
15 combination with legs having curved end faces, of ankle brackets loosely connected to the legs and on which the curved end faces bear, and feet hinged to the ankle brackets.

5. In an ambulatory traction wheel, the
20 combination with a cam having flattened upper and lower surfaces and curved ends, of a

rotary casing having leg-guides, and legs slidable in the leg-guides and provided with curved rocker ends bearing on said cam.

6. In an ambulatory traction wheel, the
25 combination with a cam, of a rotary casing having leg-guides, legs slidable in the leg-guides and provided with curved rocker ends bearing on said cam, and a taut flexible connection between all of the legs.
30

7. In a wheel for a vehicle, an outer casing adapted to revolve, radial legs adapted to slide in and beyond the casing, a cam on the vehicle, curves on the ends of the legs to roll
35 against the cam, studs on the legs, sheaves on the studs, and a band around the sheaves to contact the legs with the cam.

WILLIAM T. JONES.

Witnesses:

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D. DAY SMITH.