

(No Model.)

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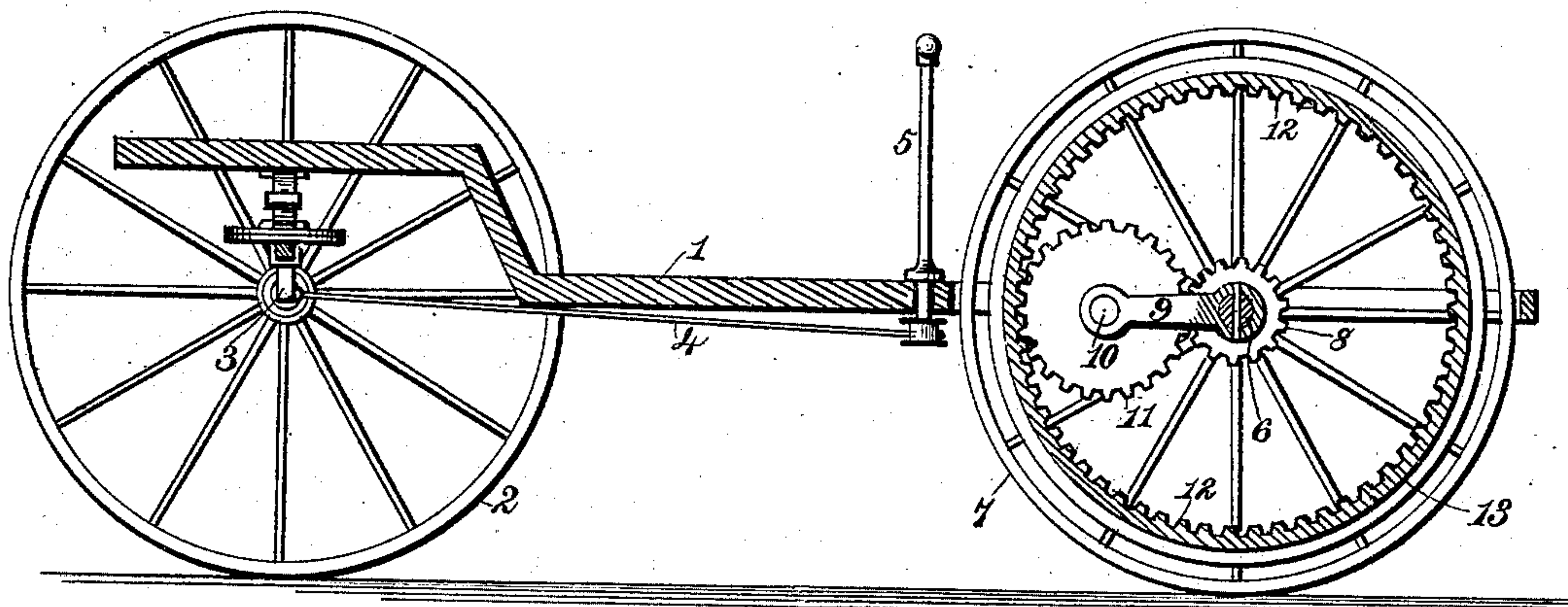
W. S. MITCHELL.

MECHANISM FOR PROPELLING VEHICLES.

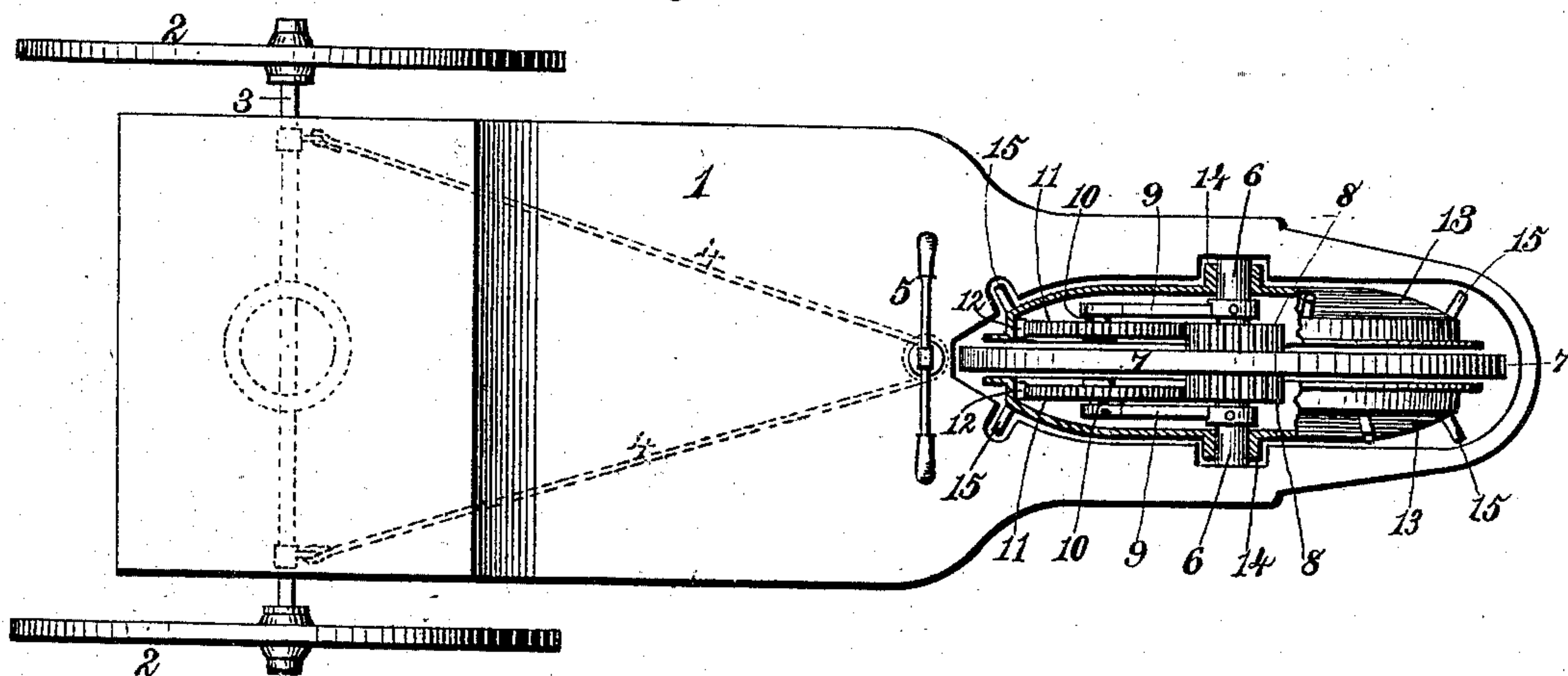
No. 271,899.

Patented Feb. 6, 1883.

*Fig. 1.*



*Fig. 2.*



Witnesses,  
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Inventor,  
*William S. Mitchell,*  
*By James L. Norris,*  
Atty.

(No Model.)

2 Sheets—Sheet 2.

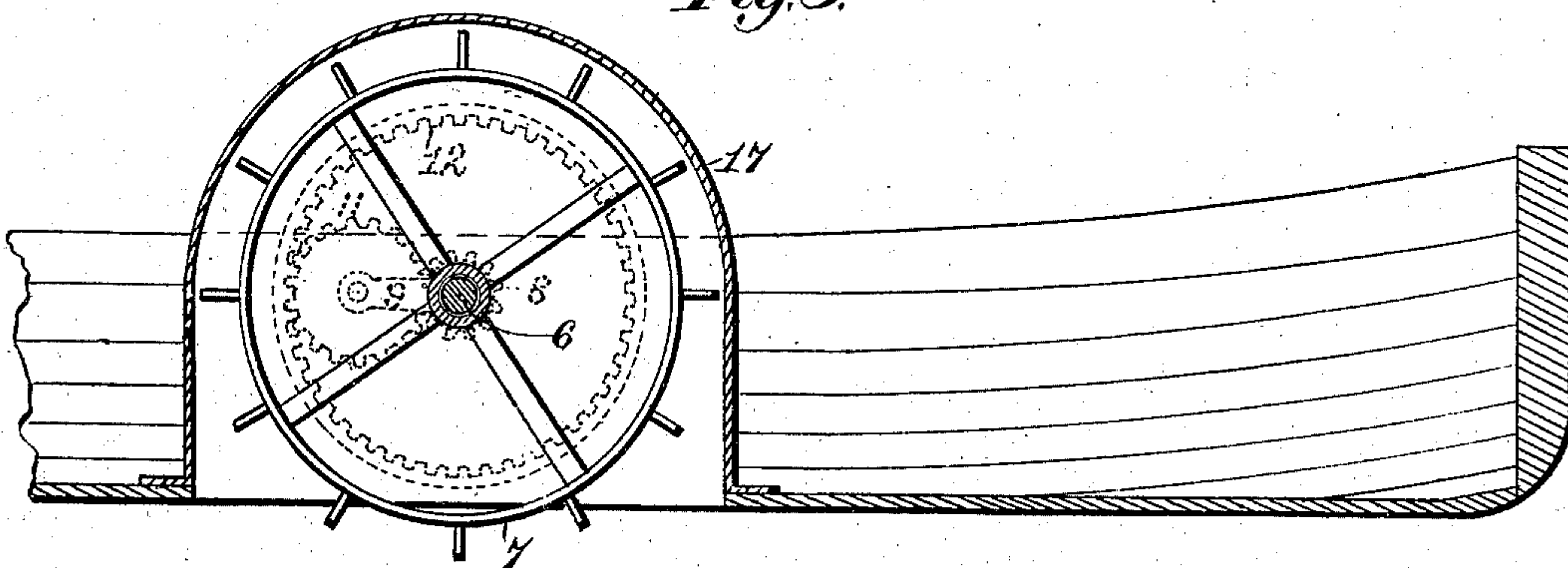
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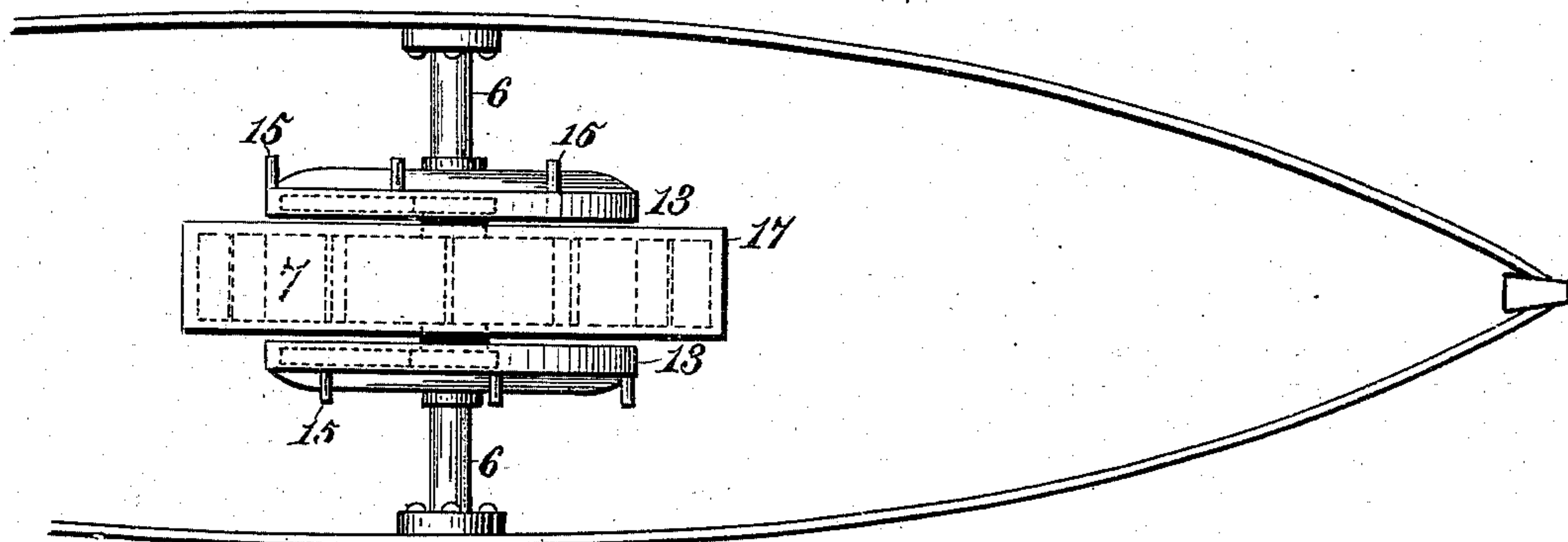
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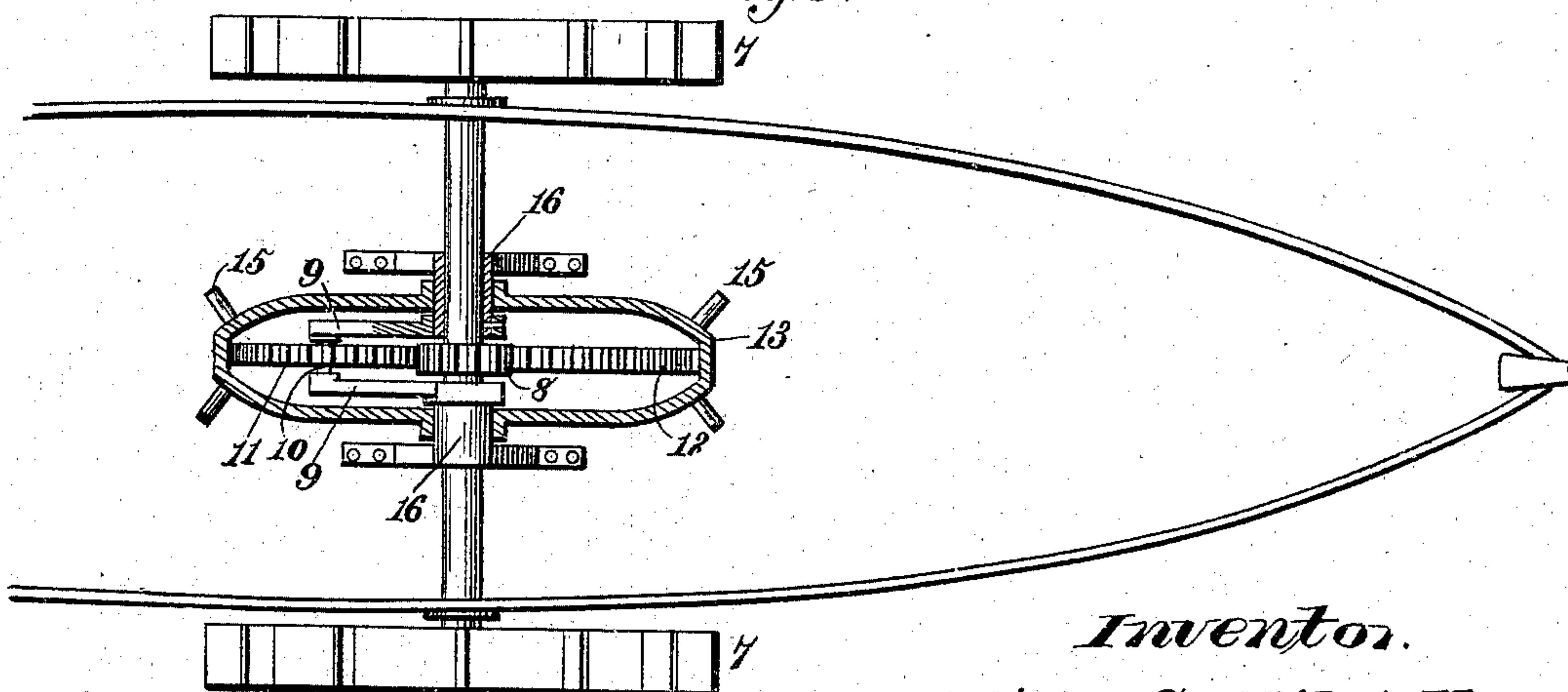
*Fig. 3.*



*Fig. 4.*



*Fig. 5.*



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# UNITED STATES PATENT OFFICE.

WILLIAM S. MITCHELL, OF WASHINGTON, DISTRICT OF COLUMBIA.

## MECHANISM FOR PROPELLING VEHICLES.

SPECIFICATION forming part of Letters Patent No. 271,899, dated February 6, 1883.

Application filed December 19, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM S. MITCHELL, a citizen of the United States, residing at Washington, in the District of Columbia, have invented new and useful Improvements in Mechanism for Propelling Vehicles, of which the following is a specification.

This invention has for its object to provide simple but efficient mechanism for driving land and water conveyances or vehicles—such as velocipedes—whereby great speed is attainable with but comparatively little physical exertion on the part of the rider or operator, the power of propulsion being transmitted to the driving wheel or wheels by the weight of the operator through the instrumentality of multiplying gearing, in such manner that it is only essential for the rider or operator to use the feet similar to walking, thus avoiding undue physical exertion and consequent exhaustion or weariness, while at the same time the vehicle can be propelled with great speed without rapid motions on the part of the rider or operator.

The object of my invention is accomplished in a desirable manner by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 represents a longitudinal sectional view of a land conveyance or vehicle provided with my improved mechanism for propelling the same; Fig. 2, a plan view of the same with portions of the treadle wheels or disks in section to illustrate the mechanism inclosed by them; Fig. 3, a longitudinal broken sectional view of a water conveyance or vehicle provided with my improved mechanism for propelling the same; Fig. 4, a plan view of Fig. 3, and Fig. 5 a modification showing the mechanism arranged to drive a propelling-wheel at each side of the water conveyance or vehicle, instead of a single central propelling-wheel, as in Figs. 3 and 4.

In order to enable others skilled in the art to make and use my invention, I will now proceed to describe the same in detail, reference being first had to Figs. 1 and 2 of the drawings, in which 1 indicates the body or platform of a land conveyance or vehicle—such, for example, as a velocipede; 2 2, the rear supporting and steering wheels, mounted on an axle, 3; and 4 4, the steering rods or chains, connected with the

tiller 5, which is suitably supported at any convenient or suitable point on the body or platform to be within reach and under control of the rider. The front end of the body 1 is slotted or otherwise constructed to receive and carry the shaft 6, which supports the propelling mechanism, said shaft being suitably secured at its ends to the body, so as to remain in a fixed position. The propelling-wheel 7 is provided with a hub in the form of two pinions, 8 8, one located at each side of the wheel, and such hub is arranged to revolve on the stationary shaft 6.

To the shaft at the outside of each pinion 8 is rigidly secured an arm or support, 9, which projects rearwardly, and is provided with a short axle or journal, 10, on which is arranged to rotate a power-transmitting gear-wheel, 11, each of said gear-wheels meshing respectively with an annular series of cog-teeth, 12, provided on the interior of two treadle wheels or disks, 13, which are provided at their center with hubs 14, arranged loosely upon the stationary shaft. These treadle wheels or disks are capable of being independently rotated, and for this purpose each is suitably provided on its exterior with treadles or foot-pedals 15, which projects from the periphery of each wheel in a series, such number being provided as may be found essential for the proper propulsion of the vehicle. The treadle wheels or disks are preferably dished and flanged at their periphery, the flanges standing toward each other in close proximity to the propelling-wheel 7, and such flanges carry the internal annular series of cog-teeth 12. It will be seen that this arrangement provides a complete housing for the multiplying gearing, and prevents contact therewith from the outside, thus avoiding clogging or interruption of the mechanism from ordinary causes.

A seat for the rider or operator may be placed at any suitable point on the body or platform, but should be so located that the feet will be free to be pressed downward upon the treadles or pedals of one wheel or disk and then upon the others in such manner that the downward pressure can be exerted through the weight of the rider with but little physical exertion and power, in order to attain the beneficial results incident to my invention.

In practice the treadle wheels or disks can be



continuously rotated by the direct downward pressure incident to the weight of the rider, thus revolving the gear-wheels 11, which transmit the propelling power to the pinions 8, forming the hub of the propelling-wheel 7, thus imparting a very rapid revolution to the latter by a comparatively slow rotation of the treadle wheels or disks.

It will be obvious from the foregoing that the weight of the rider provides great power for propelling the vehicle, while but little, if any, physical exertion is required to propel the vehicle at such speed as may be desirable; and, further, that by a comparatively slow rotation of the treadle wheels or disks a very rapid revolution is transmitted to the propelling-wheel through the instrumentality of the annular series of cog-teeth, the gear-wheels, and the pinions.

It may not under all conditions be essential to provide a treadle wheel or disk, gear-wheel, and pinion at each side of the propelling-wheel, for the reason that propelling mechanism could be provided with such mechanism at but one side of the propelling-wheel.

In Figs. 3, 4, and 5 I have illustrated my invention as applied to a boat or conveyance for traveling on water in such manner as to revolve one or more paddle or other propelling wheels. Figs. 3 and 4 show the vessel having a single centrally-located propelling-wheel, located in a suitable housing, 17, and secured to the shaft 6, the remaining parts of the driving mechanism being in all substantial material respects the same as those described with reference to Figs. 1 and 2. In Fig. 5 the vessel has a propelling-wheel, 7, at each side, which is rigidly secured to the shaft 6. In this instance it is essential for the shaft to revolve, and it therefore becomes necessary to provide means for supporting the arms which carry the gear-wheels 11, so that said arms remain stationary while permitting the shaft to revolve. This I accomplish by providing fixed bearings 16, in which the shaft revolves, such bearings serving as a medium for supporting the treadle wheels or disks, so that they can be rotated, while the inner ends of the bearings serve to support the arms 9, which carry the gear-wheels 11. In this example, also, of my invention it is only essential to provide a single pinion, 8; but it must be fixed to the shaft 6, so as to revolve the same when power is applied. Further than this, I provide a single rotating treadle wheel or disk having treadles or pedals 15 at each side, and interiorly provided with but a single annular series of cog-teeth, 12, to engage the single gear-wheel 11.

In operation, the treadle wheel or disk is ro-

tated by the weight of the rider or operator on the foot-pedals, as before explained, which, through the annular series of cog-teeth, revolve the gear-wheel, the latter transmitting rotary motion to the pinion on the shaft, thus revolving the latter with the paddle or similar wheels and effecting the propulsion of the vessel in an effective manner.

The advantages incident to the mechanism described with reference to the first four figures of the drawings are also derived by the employment of the mechanism illustrated in Fig. 5, and in each instance a propelling mechanism of great power is obtained.

It will of course be understood that the water-conveyance will be provided with suitable steering devices, such as a tiller connected with a rudder; and, further, that a suitable seat for the rider or operator may or will be provided, all of which can be suitably arranged to suit the requirements of the user. While I have illustrated my invention as applied to particular styles of land and water conveyances, I do not confine myself thereto, as the vehicle can be of any desired construction and of any modern style of velocipede or carriage for traveling either on the ground or water.

Having thus described my invention, what I claim is—

1. The combination, with a carriage or vehicle for traveling on the ground or water, of a propelling mechanism consisting of a pinion for revolving the vehicle-propelling wheel, a power-transmitting gear-wheel carried by arm or support permanently fixed in a stationary position and engaging the said pinion, and a wheel or disk having projecting pedals attached directly to it, said wheel or disk being thus rotated by the weight of the rider or operator and provided interiorly with an annular series of cog-teeth engaging the said gear-wheel, substantially as described.

2. The combination, with a vehicle for traveling on the land or water, of a shaft supporting a wheel for propelling the vehicle, a pinion attached at each side of the wheel, gear-wheels carried by arms attached to the shaft, and two independent treadle wheels or disks rotated by the weight of the rider or operator, and each provided interiorly with an annular series of cog-teeth respectively engaging the gear-wheels, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

WM. S. MITCHELL.

Witnesses:

JAMES L. NORRIS,  
J. A. RUTHERFORD.