

No. 673,336.

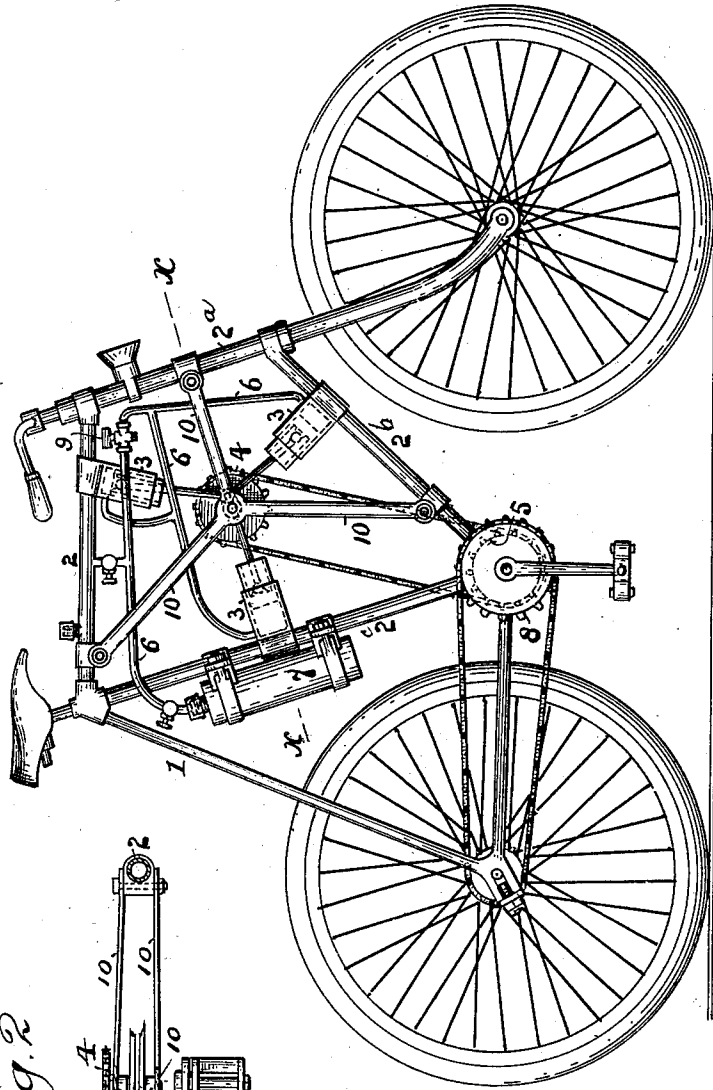
Patented Apr. 30, 1901.

E. N. DICKERSON.  
MOTOR CYCLE.

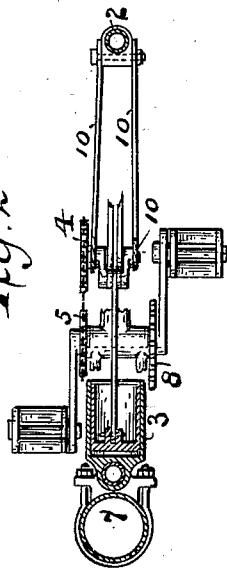
(Application filed Mar. 13, 1896.)

(No Model.)

*Fig. 1*



*Fig. 2*



WITNESSES:  
*Geo. Waldman*  
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INVENTOR  
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# UNITED STATES PATENT OFFICE.

EDWARD N. DICKERSON, OF NEW YORK, N. Y.

## MOTOR-CYCLE.

SPECIFICATION forming part of Letters Patent No. 673,336, dated April 30, 1901.

Application filed March 13, 1896. Serial No. 583,013. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD N. DICKERSON, of No. 253 Broadway, in the city, county, and State of New York, have invented a new and useful Improvement in Motor-Cycles, of which the following is a full, true, and exact description, reference being had to the accompanying drawings.

This invention relates to an improvement in self-moving bicycles or tricycles in which the vehicle is moved by the operation of a gas-engine and such gas is carried by the vehicle itself in compressed or, preferably, liquefied form.

My invention will be readily understood from the accompanying drawings, in which—

Figure 1 represents an elevation, and Fig. 2 a section through Fig. 1 on the line *x x*.

Referring more particularly to the drawings, 1 designates a bicycle, which may be of any ordinary construction and is provided with a frame formed in part by the bars 2, 2<sup>a</sup>, 2<sup>b</sup>, and 2<sup>c</sup>, which are all in the same vertical plane. Within the opening between these frame-bars are motor-cylinders 3, radially arranged and each supported upon a different bar of the frame and extending upon each side thereof, whereby the strain upon the frame and the weight of parts are equally distributed. These motor-cylinders are connected to operate a driving-wheel 4, which is in turn connected, by means of a chain, to a sprocket-wheel 5, mounted on the crank-shaft. The frame is made hollow and of sufficient strength to stand the pressure of the liquefied gas, which is then supplied to the different motors 3 3 3 through connecting-pipe 6. An additional gas-tank 7 may be carried, as indicated. The motors 3 may be of any suitable construction and are therefore illustrated diagrammatically, indicating such a construction, for instance, as in the Riker engine, fully shown in Letters Patent No. 335,629.

The advantage of using liquefied gas is that great power can be carried in small bulk. Acetylene gas has been shown to be peculiarly useful for this purpose.

By the arrangement shown the gas-engine itself can be started by operating the bicycle from the pedal in the usual way, when on opening the gas-cock 9 explosions will occur

and the apparatus will be driven in the usual way, the power so developed being of course regularly regulated from the valve 9.

By utilizing the frame of the bicycle for carrying the liquefied gas I save additional weight and get considerable carrying capacity for such gaseous fuel, the said frame being also used as a support for the motor-cylinders and also serving as the frame of the machine.

It will be seen that the engine is so supported that it projects to both sides of the central plane of the frame. This not only secures an even balance, but results in bringing all the strains in said plane, so that there is no tendency to twist or distort the frame, and a lighter frame can be used than would otherwise be practicable.

It is obvious that though I have shown three motor-cylinders as being a preferable arrangement a less number could be employed without departing from the spirit of my invention. The arrangement shown, however, of said three motors driving the shaft carried in the auxiliary frame 10, itself detachably clamped to different bars of the main frame of the bicycle, is very convenient.

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

1. The combination with the frame and pedal-shaft of a bicycle, of a motor-engine having a plurality of cylinders each connected to a part of the frame, a crank-shaft with which the pistons of the cylinders are connected, and means for driving the pedal-shaft from the crank-shaft, substantially as set forth.

2. The combination of a velocipede having a four-sided frame and a motor having a plurality of cylinders attached to different sides of the frame and a single driving-shaft connected with the pistons of said cylinders and supported in the space intermediate the sides of the frame, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

E. N. DICKERSON.

Witnesses:

H. COUTANT,  
ANTHONY GREF.