

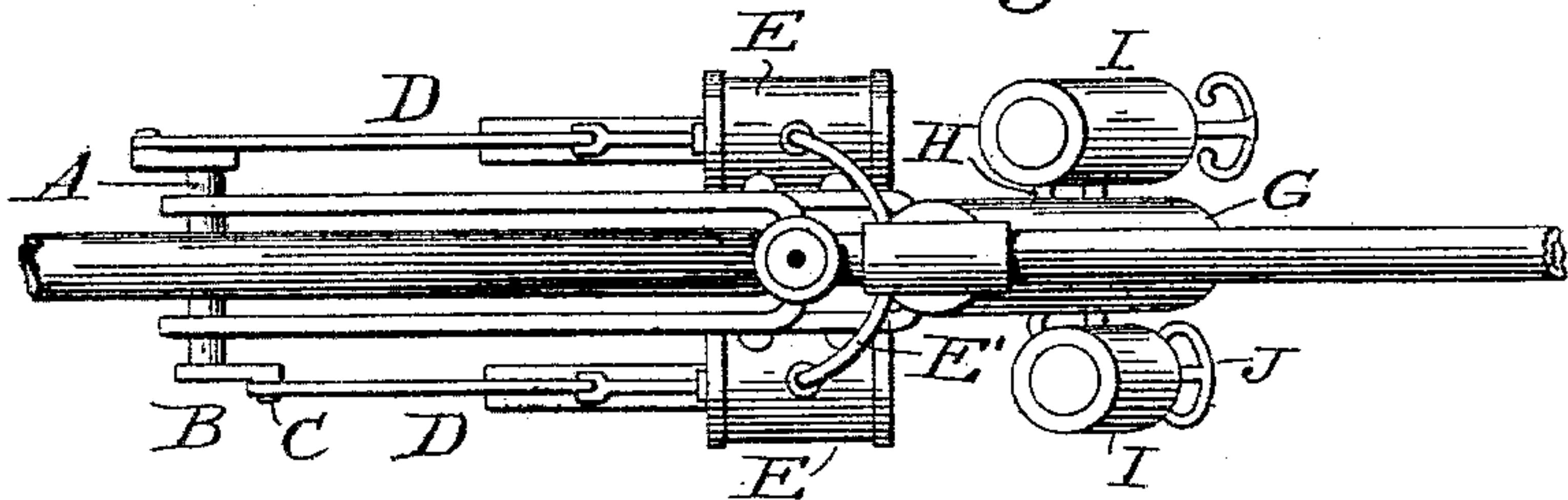
(No Model.)

J. L. HANSARD & R. HIATT.  
AIR MOTOR FOR BICYCLES.

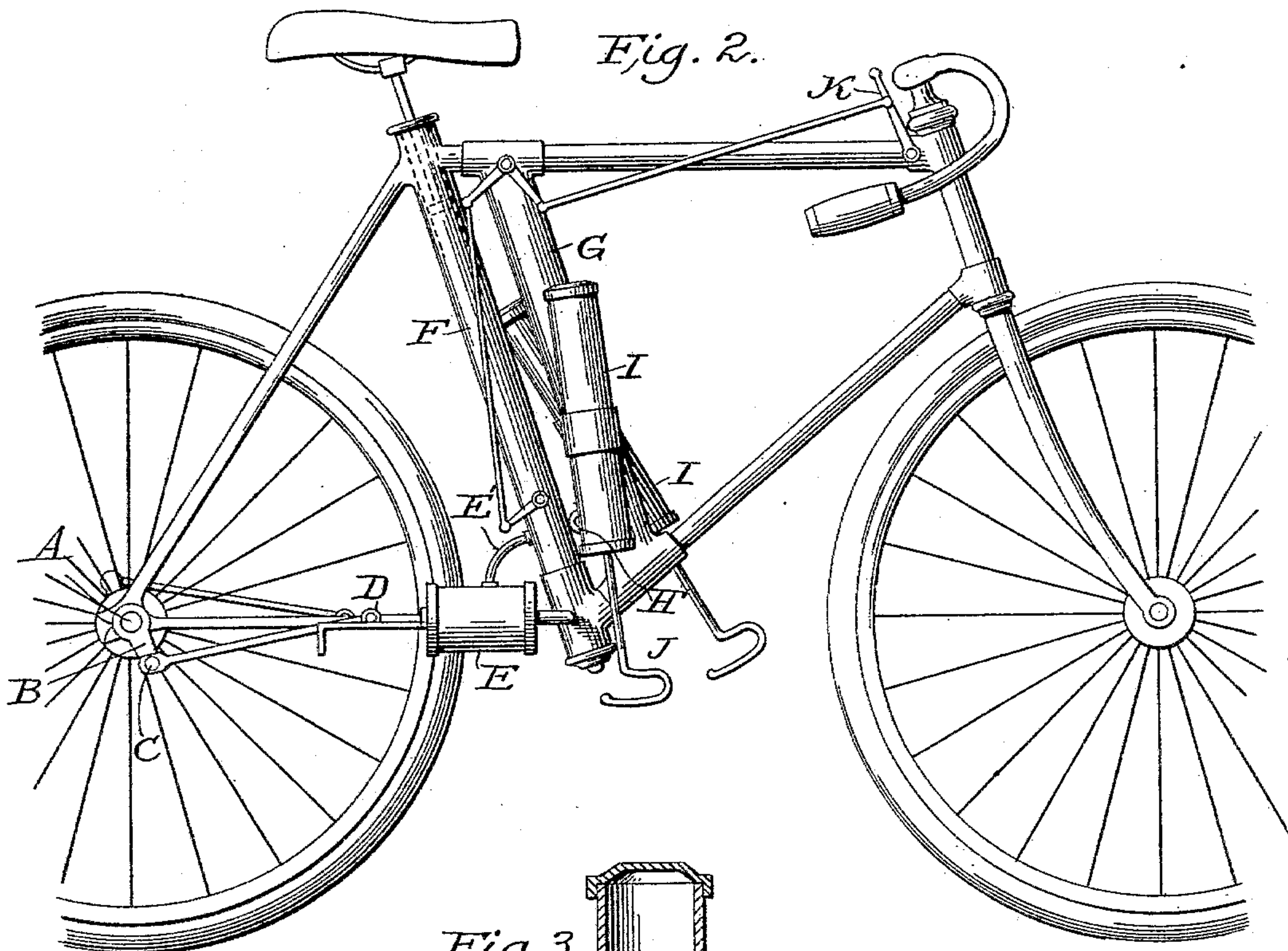
No. 597,466.

Patented Jan. 18, 1898.

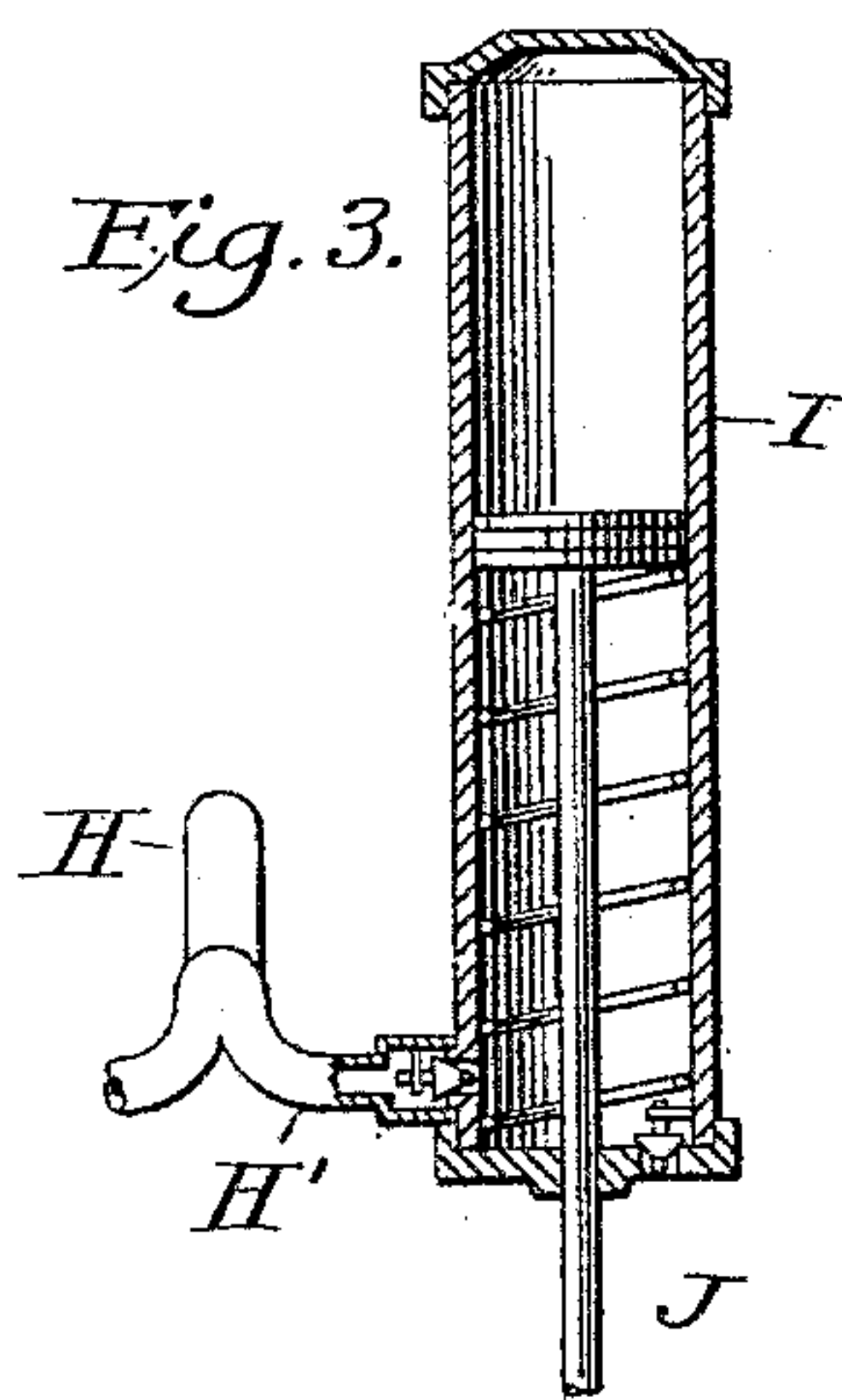
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



Witnesses  
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# UNITED STATES PATENT OFFICE.

JOSEPH LAFAYETTE HANSARD AND RUFFIN HIATT, OF LEBANON, OREGON.

## AIR-MOTOR FOR BICYCLES.

SPECIFICATION forming part of Letters Patent No. 597,466, dated January 18, 1898.

Application filed July 7, 1896. Serial No. 598,317. (No model.)

*To all whom it may concern:*

Be it known that we, JOSEPH LAFAYETTE HANSARD and RUFFIN HIATT, citizens of the United States, residing at Lebanon, in the county of Linn and State of Oregon, have invented certain new and useful Improvements in Air-Motors for Bicycles; and we 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.

This invention relates to certain new and useful improvements in bicycles; and it has for its objects, among others, to provide a simple and cheap propelling mechanism or motive power in which the sprockets and chain are dispensed with and in their stead air is employed, the feet acting on the pump or pumps and the motion transmitted to the main shaft of the rear wheel through suitable mechanism and connections, whereby greater speed is attained at less cost and exertion of power and the parts are so arranged as not to be liable to get out of order and do not aid materially in increasing the weight of the machine. The wheel is perfectly balanced and the reversal of the engine acts as a brake.

Other objects and advantages of the invention will hereinafter appear, and the novel features thereof will be specifically defined by the appended claims.

The invention in this instance resides in the peculiar construction and the combinations, arrangement, and adaptation of parts, all as more fully hereinafter described, shown in the drawings, and then particularly pointed out in the claims.

The invention is clearly illustrated in the accompanying drawings, which, with the letters of reference marked thereon, form a part of this specification, and in which—

Figure 1 is a top plan of our improvement. Fig. 2 is a side elevation of a bicycle with the invention applied thereto. Fig. 3 is a detail of one of the pumps.

Like letters of reference indicate like parts throughout the several views.

Referring now to the details of the drawings by letter, A designates the shaft or axle of the drive-wheel, which is mounted to revolve in suitable bearings and extended at

each end, and on the extended ends are fast the crank-arms B, the crank or wrist pins C of which are oppositely disposed, as shown, and to each crank-pin is connected a rod D, working through a stuffing-box and opening in the ends of the air-cylinders E, within which they are connected to pistons, the two pistons being adapted to work alternately in opposite directions, so that when one is moving inward in its cylinder that in the other is working outward. From these cylinders extend the pipes E', which are connected with the pipe F, which leads into the air-tank G, from which leads the pipe H, which connects with the branch pipes H', which connect with the vertically-disposed oscillating pump-barrels I, provided with pistons working therein and having rods terminating in foot-pedals J.

In operation the pumps are operated by the movement of the pedals by the feet of the rider, and the crank-pins on the disks are actuated through the medium of the mechanism shown. The mechanism is supported centrally on or from the frame of the bicycle and is out of the way of the rider. The air-pumps may be of any desired length and material and are preferably provided with a rebounding spring inside thereof, or in lieu thereof a suction-pad. The seat may be connected with and supported upon the air-chamber, so as to be supplied with air therefrom and thus made a pneumatic seat. The engine may be reversed in any suitable manner, and a lever K is provided to operate a shut-off cock to regulate the speed of the machine.

Modifications in detail may be resorted to without departing from the spirit of the invention or sacrificing any of its advantages.

What is claimed as new is—

1. The combination with a vehicle-frame and a storage-tank of a pair of vertically-disposed oscillating pump-barrels, pivoted to said frame, and pistons working in said barrels and having rods terminating in pedals and coöperative connections for propelling the vehicle, substantially as shown and described.

2. The combination with a pair of vertically-disposed oscillating pump-barrels, a frame to which they are pivoted, and pistons

working in said barrels and having rods terminating in pedals, a storage-tank, and connections between the pumps and said tank and connections between said tank and the  
5 propelling devices of the vehicle, substantially as described.

In testimony whereof we have signed this

specification in the presence of two subscribing witnesses.

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