

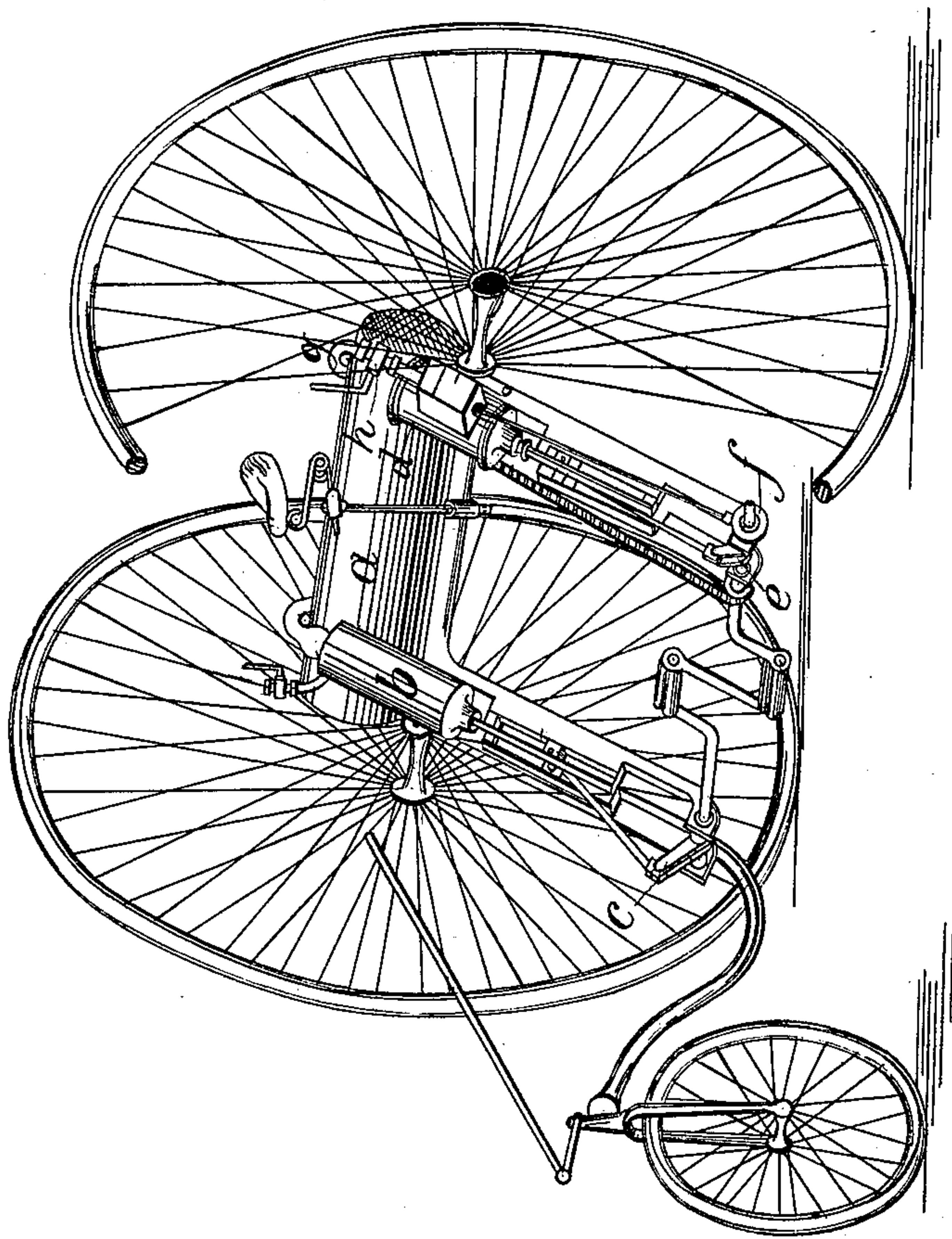
(No Model.)

A. H. ALLDRIDGE.

VELOCIPÈDE.

No. 336,372.

Patented Feb. 16, 1886.



Witnesses:  
W. R. Haight  
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# UNITED STATES PATENT OFFICE.

ARTHUR HENRY ALLDRIDGE, OF BIRMINGHAM, COUNTY OF WARWICK, ENGLAND, ASSIGNOR OF ONE-HALF TO SAMUEL JOHN DAVIS, OF SAME PLACE.

## VELOCIPED.

SPECIFICATION forming part of Letters Patent No. 336,372, dated February 16, 1886.

Application filed October 20, 1885. Serial No. 180,438. (No model.) Patented in England March 24, 1884, No. 5,364.

*To all whom it may concern:*

Be it known that I, ARTHUR HENRY ALLDRIDGE, of Birmingham, in the county of Warwick, England, manufacturer, and a subject of the Queen of Great Britain, have invented certain new and useful Improvements in Compressed-Air Motors for Driving Velocipedes, Tricycles, and other like Machines, (for which I have received Letters Patent in England, No. 5,364, dated March 24, 1884;) and I do hereby declare that the following is sufficient description of the invention to enable those skilled in the art to which it appertains to carry the same into practical effect.

The object of my invention is to provide a simple form of motor for driving velocipedes, tricycles, and other like machines by means of compressed air.

When a velocipede or other similar machine is proceeding down a hill, there is a considerable amount of propelling-power consumed in the shape of friction on the brake, which in ordinary circumstances is entirely wasted, and which surplus power would be of great service if it could be stored up so as to be utilized either as an independent means of driving or as an auxiliary power when traveling uphill or on a level road.

Now, my invention consists of a suitable means of utilizing such surplus power or other surplus power which may be found available—such, for instance, as in stopping the machine—for storing air and retaining the same so stored until it is required to drive or assist in driving the vehicle. I provide a suitable reservoir or receiver of sufficient strength to sustain the necessary internal pressure. This receiver is preferably made of steel, in order to insure lightness with strength, and is fitted with a suitable safety-valve adapted to its strength. I do not confine myself to any precise position for this receiver, as such position depends upon the particular construction of the vehicle to which it is applied. To the ordinary pedal-axle I fit two or more extra cranks. One or more of such cranks is or are fitted so that it or they may work or drive one or more air pump or pumps. Suitable induc-

tion and eduction valves are fitted to the pumps, the induction-valves admitting air from the external atmosphere into the pumps, and the eduction-valves allowing the air to be pumped or forced into the reservoir and prevent its return. A junction-tube with a cock is also fitted to allow the air to pass freely in and out of the pump when it is inconvenient to force air into the reservoir; or relief-taps of any convenient form may be fitted for the same purpose; or a disconnecting apparatus may be fitted, whereby the pumps may be put into or out of gear.

The most convenient and advantageous time for using the pump and storing air in the reservoir is when descending a steep hill, at which time the application thereof not only utilizes the propelling force acquired from the inclination of the road, but also acts effectually as a brake to prevent the speed of the vehicle becoming too great. When the vehicle has arrived at the end of the incline, the pumps may be immediately disconnected or the air admitted freely thereto, as no useful work can then be obtained from them, and the reservoir retains the compressed air already stored until it is required for use to produce motive power.

The remaining crank or cranks, hereinbefore mentioned as fitted to the pedal-axle, is or are in connection with a driving-cylinder or driving-cylinders constructed and arranged in a similar manner to steam-engine cylinders, having pistons, piston and connecting rods, valves, eccentrics, and reversing-gear for working the slide-valves and distributing the compressed air to the cylinders; or, instead of ordinary cylinders, I adapt the "tower" spherical engine as a means of driving the pedal-axle. I connect such engine or cylinder or cylinders by means of a pipe having a regulating-valve or stop-cock with the air-reservoir, providing a suitable reducing-valve in order to equalize the pressure of the air and the power of the engine.

The means of applying the power stored in the reservoir being always at the command of the rider, such power may be applied whenever required; but it is intended more espe-



cially to be used in ascending hills, in which case it is used either as an auxiliary power to that of the rider through the pedal-axle, or it may be used alone, according to the inclination and state of the road.

In the accompanying drawing, which represents a perspective view of a tricycle fitted with one form of my improvements, *a* is the reservoir for containing the compressed air. *b* is the air-pump, which is worked by the crank *c*. *d* is the driving-cylinder. *e* is the crank driven thereby, and which actuates the pedal-axle. *f* is the eccentric which works the slide-valve. *g* is the air-pipe leading from the reservoir to the driving-cylinder, and *h* is the cock or regulator for admitting the compressed air to the cylinder *d*.

What I claim, then, is—

1. The combination of the wheels with the pedal-axle provided with treadles, cranks *c e*, the eccentric *f*, the air-pump *b*, the connecting-rod between the piston of said air-pump and crank *c*, the driving-cylinder *d*, the connecting-rod between the piston of said driving-cylinder and crank *e*, the slide-valve, the connecting-rod between said slide-valve and

the eccentric *f*, the reservoir *a*, in which air is compressed by pump *b*, the pipe *g*, through which the air passes from said reservoir to said driving-cylinder, and the cock *h* in said pipe, which regulates the passage of air through the same, for the purpose set forth.

2. The wheels and pedal-axle of a tricycle or bicycle, in combination with a reservoir for compressed air carried thereby, a pump operated by said pedal-axle for supplying air to said reservoir, a driving-cylinder the piston of which is connected to said pedal-axle, and a pipe allowing compressed air to pass from said reservoir to said driving-cylinder, the vehicle being arranged and adapted to be propelled either by the rider's feet or by the driving-cylinder at will, substantially as set forth.

In testimony that I claim the foregoing as my own I affix my name in the presence of two witnesses.

ARTHUR HENRY ALLDRIDGE.

Witnesses:

SAMUEL JOHN DAVIS,  
GEORGE BARKER.