2 Sheets--Sheet 1.

L. G. PERREAUX.

Improvement in Velocipedes.

No. 124,621. Patented March 12, 1872.

Fig. 1.

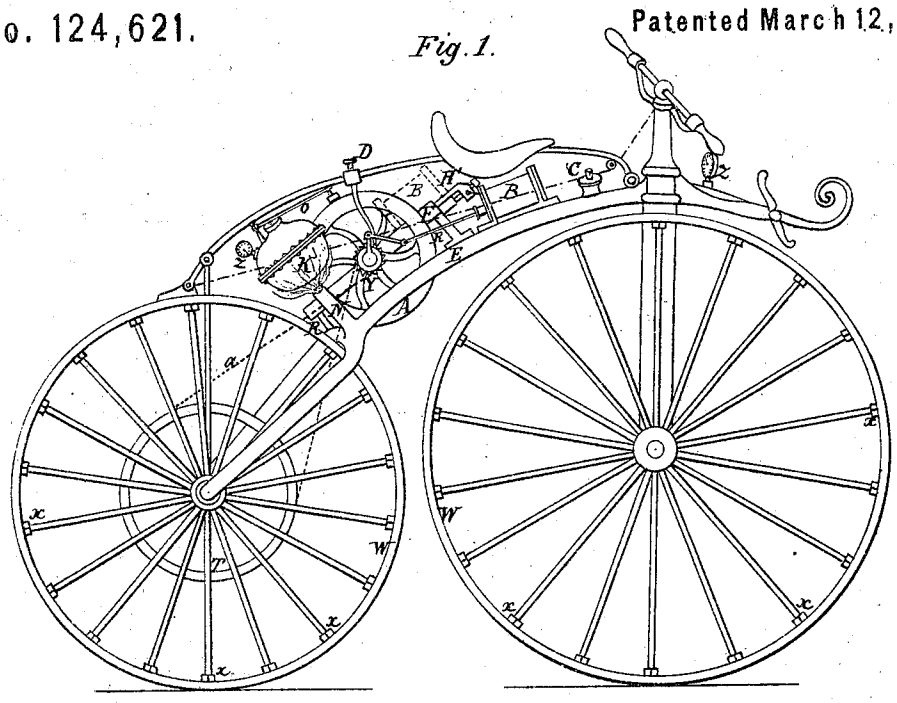


Fig. 3.

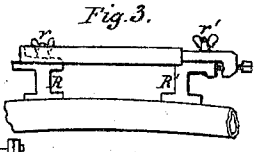


Fig. 2.

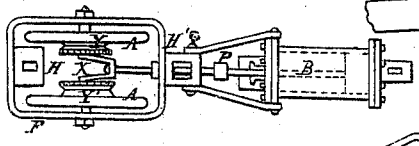


Fig. 4.

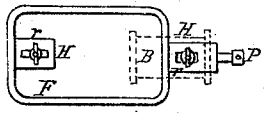


Fig. 5.

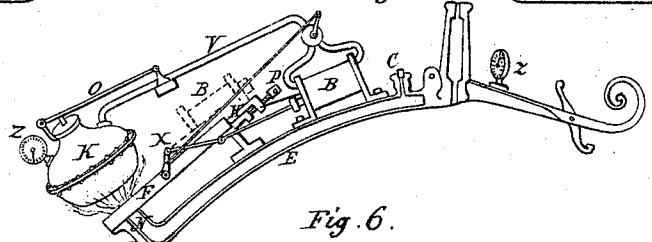
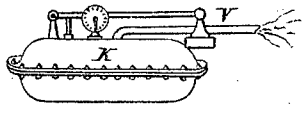


Fig. 6.



Witnesses.

C. B. Nottingham

Thomas C. Smith

Inventor.

Louis Guillaume Perreaux

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2 Sheets--Sheet 2.

L. G. PERREAUX.

Improvement in Velocipedes.

No. 124,621. Patented March 12, 1872.

Fig. 10.

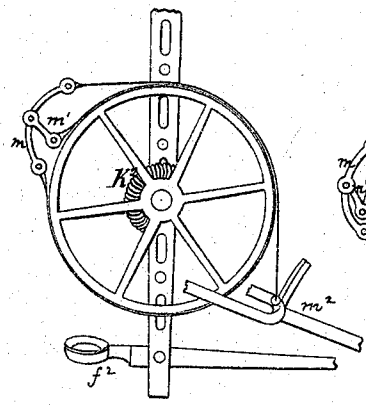


Fig. 11.

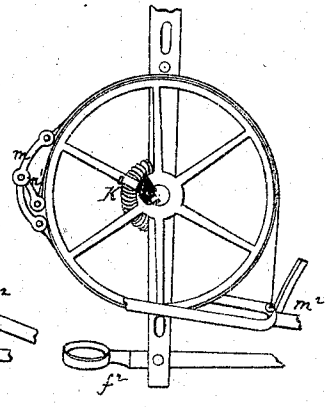


Fig. 9.

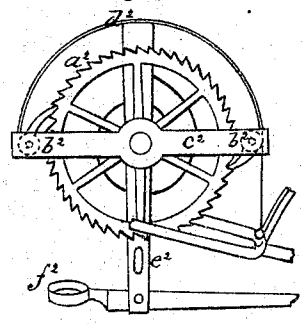


Fig. 7.

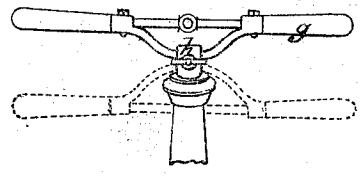
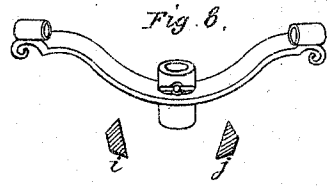


Fig. 8.



Witnesses.

C. B. Nottingham.

Thomas C. Smith

Inventor.

Louis Guillaume Perreaux

by Wolfe his atty

UNITED STATES PATENT OFFICE.

LOUIS G. PERREAUX, OF PARIS, FRANCE.

IMPROVEMENT IN VELOCIPEDES.

Specification forming part of Letters Patent No. 124,621, dated March 12, 1872.

To whom it may concern:

Be it known that I, LOUIS GUILLAUME PERREAUX, of Paris, France, have invented certain new and useful Improvements in Velocipedes, of which the following is a specification:

One of the principal features of my invention consists in the employment on velocipedes of fly-wheels for the purpose of having a reserve of power in ascending grades, and of rendering the movements of the apparatus more uniform and regular.

The accompanying drawing represents the arrangement which I prefer to employ. The velocipede may be driven either by the feet, as usual, or by the action of steam. I have represented in the drawing an arrangement of the latter kind, which will indicate the manner in which steam may be applied for this purpose. In case the feet are employed to drive the apparatus I prefer to use, instead of the customary cranks, an arrangement of ratchets and pawls actuated by pedals, whereby the velocipede may be actuated to better advantage than by the cranks, whose "dead-points" are always a serious obstacle. These and other features of my invention may best be explained by reference to the drawing, in which—

Figure 1 is a side elevation of a velocipede made in accordance with my invention. The remaining figures are views of detached parts, which will be hereinafter referred to.

A represents the fly-wheels, which are mounted in a frame, F, attached to the vertical column E of the velocipede. These wheels are provided with pulleys or smaller-grooved wheels, which receive the bands or cords *a*, the latter passing over the large pulleys T on either of the wheels W. The frame F is provided with slotted plates H H′ cast in one piece with or otherwise attached to the same, through which pass set-screws *r r′*, screwing into feet or standards R R′ attached to the column E, and thus holding the frame in place on the column. The slots in plates H H′ allow the frame to be moved back and forth on the standard R R′ for the purpose of adjustment and of tightening the pulley-cords *a*. The fly-wheels A A′, when the machine is in motion, give great steadiness to it, and enable the velocipede to ascend grades with greater ease. With the fly-wheels I can combine a small steam-engine, an arrangement for which purpose is shown in the drawing, all the parts being carried, preferably, by the frame F. B is the steam-cylinder with its valve *t*. K is a boiler of suitable form, located at any convenient point on the frame, provided with the usual pump and feed, and connected by steam-pipes V with the valve and steam-cylinder, and provided with a safety-valve, O. There should be provided a gauge, Z, to indicate steam-pressure, which gauge, for convenience, may, if desired, be arranged in front of the driver's seat. The fly-wheels A A′ are provided with cranks X, connected with the piston-rod of the steam-cylinder, as shown.

The boiler may be heated in any suitable manner. I prefer for the purpose the arrangement shown in the drawing, which consists in making the vertebral column E hollow to receive the petroleum, oil, or other combustible liquid used for heating purposes, a funnel or opening, C, being provided, through which the liquid may be poured in. A tube, N, extending up from the column E, under the boiler, contains a wick, which, when lighted, will afford the necessary flame to heat the boiler, the tube being provided with a chimney or other means for producing a draught and preventing the flame being injuriously affected by the movement of the apparatus. By the means above described the fly-wheels may be driven and the velocipede kept in motion.

Another mode of revolving the fly-wheels is shown in Fig. 1, consisting of pawls D extending downward from the horizontal spring-strip, which supports the saddle, and engaging with ratchets Y Y′ formed on or attached to the fly-wheel. The rider, by rising and falling in the saddle, can thus, by the alternate depression and recoil of the spring-strip, cause the pawls to descend to cause a partial rotation of the ratchets, and to then rise in order to take a fresh hold. Under this arrangement the rider's feet will of course be supported by auxiliary stationary stirrups fixed to the frame of the velocipede, and he can thus, when the velocipede is in motion, cause it to continue moving with little trouble. The steering-handle *g* is shown in Figs. 7 and 8, being connected with the vertical spindle of the front wheel and held in place by a set-screw, *h*, and arranged in the manner shown, so that it may be turned either

up or down, as indicated by the full and dotted lines, or sidewise in line with the wheel, for convenience in packing. The wooden handles are mounted on a rod, which can be rotated in order to wind up the cord connected with the brake, which will be thus pressed upon the periphery of the rear-wheel, as indicated in Fig. 1.

In order to avoid using the usual foot-cranks on the front-wheel, which are objectionable, as above stated, I employ such an arrangement as shown in Figs. 10 and 11, consisting of a pulley or small wheel on the large-wheel axle, surrounded by a strap or flexible band, the ends of which are jointed to two levers, m m^1, the opposite end of lever m^1 being jointed to the lever m, and the latter being connected at its upper end to a cord which leads to a treadle, m^2, pivoted at one end to the frame of the velocipede. The depression of this treadle will cause the levers to first tighten the band on the small wheel or pulley, and then, through the medium of said band, to cause a partial rotation of said pulley, and, consequently, of the large wheel. By removing the pressure of the foot from the treadle the band will be loosened, and a spring, K^2, will then throw the levers and band back and raise the treadle in position to again be employed to act on the pulley. By this up-and-down movement of the treadle the wheel can be put in revolution.

An arrangement for a similar purpose and on the same principle is shown in Fig. 9. In lieu of the pulley a ratchet-wheel, a^2, is employed, provided with two pawls, b^2, fixed to an oscillating rectangular frame mounted loosely on the axle of the large wheel W, which frame is extended over the ratchet-wheel in the form of an arc of a circle, d^2, over which passes a band or cord, attached at one end to the frame and at the other end to the treadle e^2. A recoil-spring, as in the preceding case, is provided for raising the treadle when the pressure is removed from it. In this way, by the alternate rise and fall of the treadle, the ratchet-wheel, and, consequently, the large wheel W, may be kept in motion. Below the movable treadle is represented a fixed stirrup or rest, f^2, for the foot when the rider desires to rise and fall in his saddle in order to actuate the fly-wheels, as above described.

It will be understood that I can apply all or any one or more of the improvements herein described to any one velocipede.

In the wheels W each spoke is provided at its outer end with a nut, x, which can be screwed outward so as to keep the fellies tight and extended, and impart increased solidity and strength to the wheel.

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

1. The combination, with the main wheels of the velocipede, of fly-wheels, communicating and moving with the same, substantially as herein shown and described.

2. The combination, with the velocipede, of the driving mechanism, actuated by steam and operating substantially as herein shown and described.

3. The special construction and arrangement, herein described, of the steam-power mechanism in connection with the hollow column E of the velocipede and fly-wheels A A′, substantially as shown and set forth.

4. The devices herein shown and described for actuating or putting in motion the velocipede in lieu of the foot-cranks usually employed.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

LOUIS GUILLAUME PERREAUX.

Witnesses:
C. DELAHAYE,
EMIL BARRAULT.