No. 846,033. PATENTED MAR. 5, 1907.

W. C. KIDNEY.

CYCLE.

APPLICATION FILED FEB. 21, 1906.

2 SHEETS—SHEET 1.

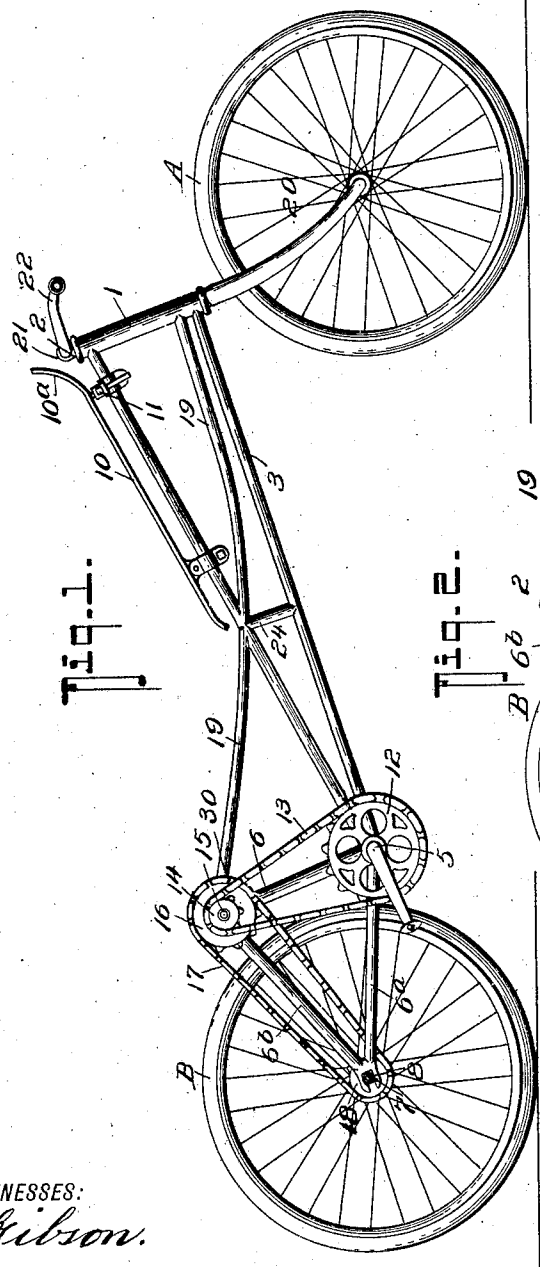


Fig. 1.

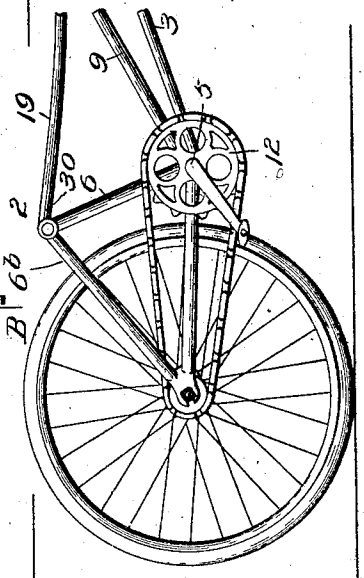


Fig. 2.

WITNESSES:

F. C. Gibson.

John T. Schrott

INVENTOR

William C. Kidney.

BY

Fred G. Dieterich & Co

ATTORNEYS

THE NORRIS PETERS CO., WASHINGTON, D. C.

No. 846,033. PATENTED MAR. 5, 1907.

W. C. KIDNEY.

CYCLE.

APPLICATION FILED FEB. 21, 1906.

2 SHEETS—SHEET 2.

Fig. 3.

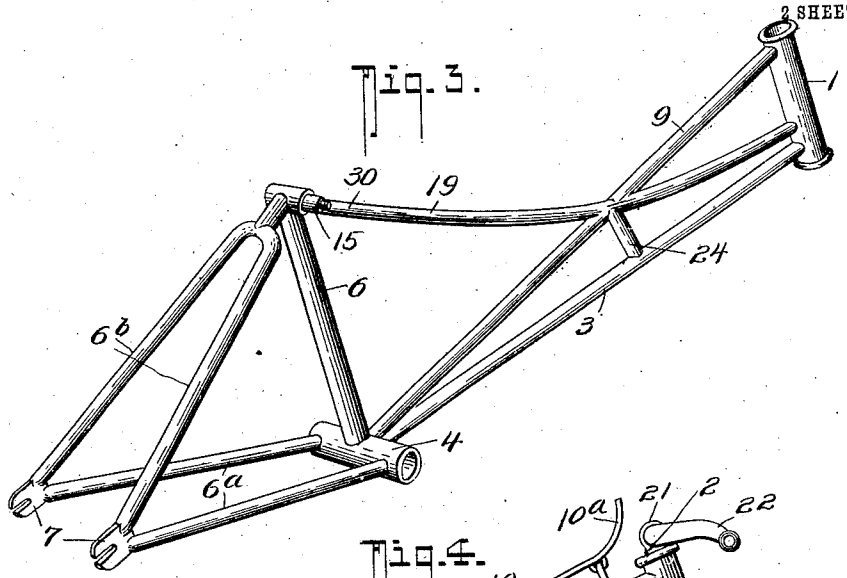


Fig. 4.

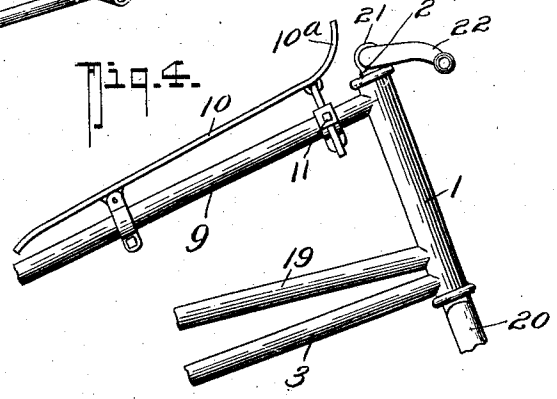
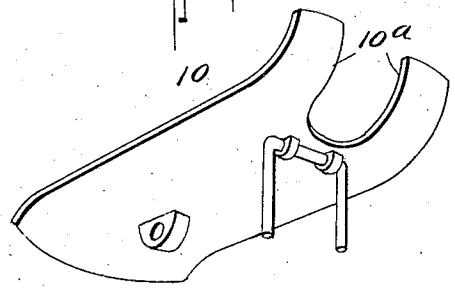


Fig. 5.



WITNESSES:

F. C. Gibson.

John T. Schrott

INVENTOR

William C. Kidney.

BY

Fred G. Dieterich & Co

ATTORNEYS

THE NORRIS PETERS CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM C. KIDNEY, OF NEW YORK, N. Y.

CYCLE.

No. 846,033. Specification of Letters Patent. Patented March 5, 1907.

Application filed February 21, 1906. Serial No. 302,295.

To all whom it may concern:

Be it known that I, WILLIAM C. KIDNEY, residing in the city, county, and State of New York, have invented a new and Improved Cycle, of which the following is a specification.

This invention relates to pedal-operated cycles of the safety type, and it primarily seeks to provide an improved construction of vehicle of the character stated more especially adapted for racing purposes.

Safety-bicycles as ordinarily constructed are arranged to support the body of the rider almost directly over the crank-axle by having a seat or rest disposed above it and in such manner that the rider maintains a substantially upright position with respect to the driving power, and it is well known that in cycles having the body so sustained the rider at the best can obtain only the strength developed from the legs working under a double-lever action, the hip-joint muscles, and the knee power. Again, in the use of ordinary type of safety-bicycles, by reason of the manner in which the rider is supported his body forms a pocket or abutment which forms a resistance for the free passing of the air, which resistance the rider in practice endeavors to minimize by bending the upper part of the body forward and downward to approximately the horizontal plane. It is well known that such positioning of the body restricts the propelling power of the rider entirely to the legs and also the capacity of leg propulsion, since the stroke or free leg and knee action is restricted by reason of the cramping of the abdominal muscles and preventing the free use of the legs.

My invention in its generic nature comprehends the formation of a seatless cycle-frame with the handles and the pedal-cranks mounted thereon and relatively so arranged and related that in propelling the rider's hands, shoulders, body, and feet will be kept in a substantially straight alinement with the propelling-cranks and handle portions and so disposed that the rider in the operative position lies prone and at such an angle with respect to the machine as to meet the air resistance practically head-on, whereby to reduce the said resistance to the minimum.

In its more complete nature my invention embodies an improved construction of framing, whereby when in the operative position the rider, while having the full advantage of propelling in the perpendicular line of the body, will also have the advantage of the pushing force of the arms and shoulders with the arms substantially straight from the body, whereby while obtaining a maximum force of pedal or pushing power a similar pushing force is acquired with the hands, arms, and upper part of the body.

My invention further comprehends an improved construction of bicycle-frame adapted for supporting the body in its perpendicular position and inclined forward and having means for sustaining the upper part of the body in the nature of a body-receiving member adjustable with respect to the framing, whereby the inclination of the body can be readily provided for to suit the convenience of the rider.

Another and essential feature of my invention lies in the connection with a special design of frame whereby to support the rider forwardly inclined with the body fully extended and a propelling means including an accumulative gearing, which joins the pedal-crank axle with the rear-wheel axle; and in its more subordinate features my invention consists in certain details of construction and novel arrangement of parts, all of which will hereinafter be described, pointed out in the appended claims, and illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of a bicycle embodying the generic features of my invention and showing a preferred arrangement of the power-transmitting-gear connections. Fig. 2 is a similar view showing the crank-axle geared directly with the drive-wheel axle. Fig. 3 is a perspective view of the framing with the crank-axle, handle-bars, and steering-head removed. Fig. 4 is a view of a portion of the frame and illustrating the manner of connecting the body-rest. Fig. 5 is a view of the said rest detached from the frame.

In the practical application of my invention, the front or steering wheel A and the rear driving-wheel B, are of the usual construction and are mounted in the bearing-boxes of the tubular framing in the usual manner.

The framing, the special construction of which forms an essential feature of my invention, comprises the front inclined member 1, in which the steering-head 2 is mounted and whose forked end 20 carries the front wheel and whose upper end has a cross-head 21, that connects with the short handle-bars 22.

3 designates the bottom bar of the frame, which joins the front member just above its fork and which extends longitudinally rearward and inclines downwardly and joins with the journal-box 4 for the crank-axle 5, which box is formed at the junction of the bar 3 with the rear frame-bar, which extends upwardly and rearwardly and forms the front arm 6 of a triangular-shaped rear extension 6^b of the framing, the horizontal member 6^a of which merges with the journal-box 7 for the rear-wheel axle 8, which bearing is formed at the junction of the said frame member 6^a and the downwardly and rearwardly inclined member 6^b of the triangular frame portion, as clearly shown in the drawing.

9 designates an upper frame-bar, the lower end of which joins with the other frame members at the point where the bottom bar 3 and the member 6 join, and at the front end it connects with the steering-head member 1. The member 9 in my construction forms a reinforce-bar of the frame and also the supporting member for the body of the rider, and for sustaining the body of the rider in a substantially prone position it is disposed at a suitable incline, so that the body of the rider assumes such position with respect to the front and rear wheels that the least resistance to atmosphere is presented, and for such purpose the said top bar is inclined at approximately thirty degrees with respect to the line of draft of the machine, and this inclination in the practical arrangement of my bicycle may be modified to suit the rider by means of a rest member 10, which is adjustably and detachably secured upon the upper end portion of the bar 9 in the manner best shown in Fig. 4, by reference to which it will be seen the rest member has its front end curved, as at 10^a, to evenly deflect the air-pressure against the upper part of the rider's body, and by raising or lowering the front end, the rear end being hinged to its bar-attaching socket, and adjusting the clamp-screw 11 the rest member 10 can be elevated to suit the requirement of the rider. It will also be noticed the said member 10 is so disposed with reference to the handle members that the rider can obtain the best leverage power from the shoulders and arms to push against the said handles, and yet grasp them in a manner to admit of instantaneous steering and with the line of push directly in alinement with the perpendicular of the body and the line of push action on the pedals.

In Fig. 1 I have shown the crank-axle equipped with a large driving-wheel 12, geared through the chain 13 with a small gear-wheel 14 on a stub-shaft or axle 15, mounted in the apex of the triangular portion of the main frame and which also carries a large wheel 16, geared through the drive-chain 17 with the small gear-wheel 18 on the rear drive-wheel axle, as shown, such arrangement of power-transmitting-gear devices providing a convenient accumulation-speed gear for running the machine to a high speed, and by reason of the triangular shape of the rear part of the frame great strength is added to the frame with but a minimum increase in weight, as well as providing for a convenient means for transmitting and accumulating the power from the crank-axle to the drive-wheel.

While I prefer to provide a gear mechanism as shown, the driving power may be transmitted direct from the crank-axle to the drive-wheel by ordinary chain connection, as shown in Fig. 2.

To further brace the framing and materially increase its strength, I provide a second top frame-bar 19, which joins at one end 30 to the apex of the triangular frame portion, and with its front end it joins the front steering-head member 3 at a point above where the joint of the lower bar connects therewith, and the said bar 19 is suitably located or curved, so that the rider in straddling the frame will have ample room to manipulate his legs while propelling the machine, and to still strengthen the frame a truss member 24 is secured between the lower and the inclined bar at the point where the inclined bar and the other upper bar cross and join.

From the foregoing, taken in connection with the accompanying drawings, the complete structure and the advantages of my invention, it is believed, will be readily apparent.

It will readily appear from the drawings that since the rider's hands, shoulders, and feet are in substantial alinement with the perpendicular of the body enables the rider to utilize his maximum strength to the best advantage and with muscular efforts of the entire body properly distributed.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a cycle, a wheeled frame having means for sustaining the rider in a prone position, said means comprising the pedal-cranks and handle members, the latter being disposed in the alinement with the body of the rider and the pedal-cranks.

2. In a cycle, a wheel-mounted frame, means for sustaining the body of the rider in a fully-extended position at a forwardly-inclined angle relatively to the frame, in such position whereby the pedal-action and the handle-bar pressure of the rider are in straight alinement with the rider's body, as set forth.

3. In a bicycle, a frame constructed to sustain the rider prone with the body fully extended, a pedal-actuated mechanism connected with the drive-wheel and a steering-head having its handles disposed in aline-

ment with the body and the pedal thrust of the rider, as set forth.

4. In a bicycle, a frame for supporting the rider in a prone position, a pedal-actuated means for propelling the machine and handle members, the said handle members and the propelling means being in straight alinement with the body of the rider when in a prone position.

5. In a bicycle-frame, means for supporting the rider's body forwardly inclined to the horizontal, said means including handles and pedal members located in alinement with the rider's body when in a prone position.

6. In a bicycle having pedal-actuated gearing for propelling the machine, and handle-bars located relatively to the pedals whereby to sustain the body of the rider fully extended in a forwardly-inclined position.

7. In a bicycle, a frame having a steering-head at one end, a pedal-actuated means for propelling at the other end and means intermediate the steering-head and the pedal means for sustaining the body in a fully-extended prone position.

8. In a bicycle, a frame having a steering-head at one end, a crank-axle mechanism at the other end, and means intermediate said steering-head and crank-axle mechanism for sustaining the body of the rider at a forwardly-inclined position, said means including a vertically-adjustable rest for the chest portion of the body.

9. A bicycle, a frame having a crank-axle bearing at one end, a steering-head at the other end, an inclined rod that joins the steering-head and the crank-axle bearing, and means on said rod for sustaining the body of the rider in a fully-extended position, for the purposes described.

10. In a bicycle, a frame constructed to sustain the rider in a prone position, an l having the handle-bars and the pedals in alinement with the extended body of the rider and having members against which the shoulders of the rider can bear, for the purposes described.

WILLIAM C. KIDNEY.

Witnesses:
FRED G. DIETERICH,
JOHN L. FLETCHER.