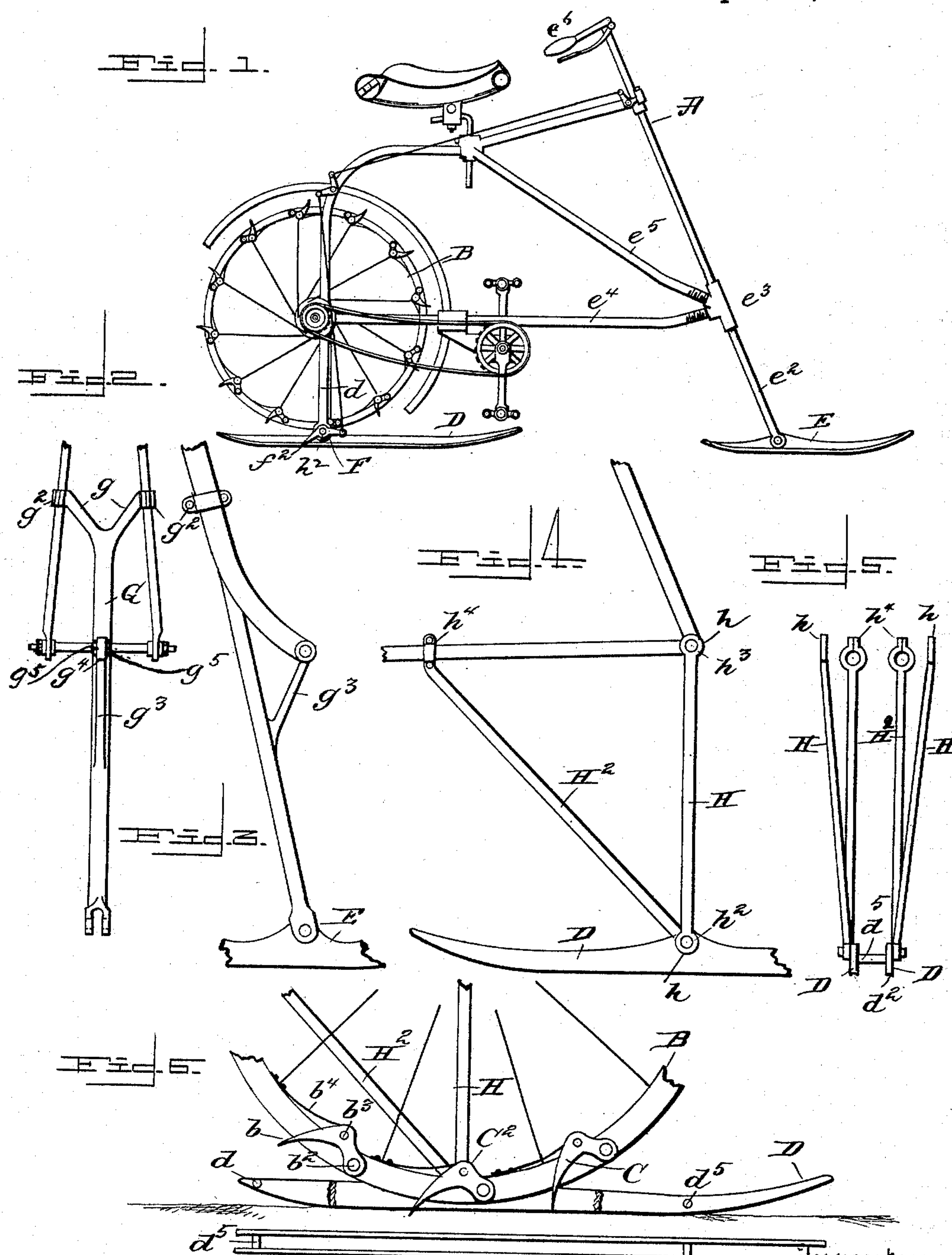


P. H. CLASS.
ICE VELOCIPEDE.

Patented Sept. 27, 1892.



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UNITED STATES PATENT OFFICE.

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ICE-VELOCIPED.

SPECIFICATION forming part of Letters Patent No. 483,422, dated September 27, 1892.

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To all whom it may concern:

Be it known that I, PHILIP H. CLASS, a citizen of the United States of America, residing at Northampton, in the county of Hampshire and State of Massachusetts, have invented certain new and useful Improvements in Ice-Cycles, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to improvements in ice-cycles or improved attachments for bicycles, more particularly to that class wherein a wheel provided with suitable devices for engaging the surface of the ice is employed to facilitate propulsion.

15 The object of the invention is to produce a construction in form of an ice-cycle and also improved attachments whereby the ordinary bicycle may be readily and conveniently converted into an ice-cycle or ice-bicycle; furthermore, in the employment of suitable means, in combination with a wheel, whereby an easy and uniform motion is produced and the machine relieved from all jolting, rack-
20 ing, &c., and finally to produce such peculiar construction, in combination with a wheel of a machine, by which an elastic or yielding connection is produced between the machine proper and the runners to insure
25 against accident, as in case of twisting strains, either longitudinal or transverse.

30 With these objects in view the invention consists of an improved form of ice-cycle comprising the ordinary framework of the bicycle, in combination with a wheel provided
35 with a number of spring pawls or creepers, which are normally held in position to engage the surface of the ice, means whereby the pawls or creepers automatically operate
40 to obviate all shocks, jarrings &c., by moving against the action of the springs as said pawls or creepers arrive at a point adjacent to the lower end of the vertical axis of the wheel; furthermore, in the combination, with
45 an ordinary bicycle-frame, of a wheel provided with a number of spring pawls or creepers arranged in pairs and suitably connected and pivoted by means of pins, springs secured to the felly of said wheel and bearing on a second series of connecting-pins, whereby the
50 pointed or sharp ends of said pawls or creepers are normally held in position to readily

engage the surface of the ice, suitably-mounted runners arranged in pairs and adapted to support the entire machine, a brake consisting
55 of the usual bell-crank levers and connecting-rods, and the brake proper in the form of a bell-crank lever provided with a sharp or pointed arm, to engage the surface of the ice and cause a resistance sufficient to overcome the
60 momentum of the machine.

Furthermore, the invention consists in various novel details of construction, whereby the objects are attained.

In the drawings forming part of this specification, in which like letters of reference indicate corresponding parts in the several views, Figure 1 is a view in side elevation of my improved form of ice-cycle, showing a machine of special construction and particularly
65 adapted to travel on ice. Figs. 2 and 3 are detail views of front attachments whereby an ordinary form of bicycle may be converted into an ice-cycle. Fig. 4 is a view in side elevation showing the rear runner and brace-
70 rods attached to the frame of a bicycle. Fig. 5 is a rear elevation of the same, shown detached. Fig. 6 is a detail view in side elevation of a portion of the rear or driving wheel, showing the arrangement of the pawls, braces,
75 and runners; and Fig. 7 is a detail view of the runners.

In the drawings, A indicates an ice-cycle, wherein the framework of an ordinary bicycle is used, together with the driving-gear,
80 seat, &c.

B indicates a wheel provided at equidistant points near the periphery with the double spring pawls or creepers *b*, as shown Figs. 1 and 6. These pawls or creepers *b* are arranged
85 on each side of the wheel-band, connected in pairs by the pivoted pins *b*², which pass through the felly of wheel B, and to further insure against breakage or disarrangement of parts
90 a second pin is provided to connect them at *b*³, which also acts as a bearing for the springs *b*⁴, whereby the pawls are normally held with the sharp or pointed ends in position to engage the surface of the ice as the wheel is re-
95 volved.

Referring to Fig. 6, it will be seen that the pawl C is in position to take into the ice, and, further, that the weight of the machine will
100 force the point downwardly, at the same time

relieving pawl C^2 , by allowing it to turn on its pivot b^2 against the action of the spring b^4 until the point is out of engagement with the ice, when the spring acts and it is forced into position to engage as the wheel makes a revolution. Owing to the resistance of the spring, the load or weight will be gradually transferred without causing any unevenness or jolting as the machine moves forward, thereby obviating the greatest objection to the use of cycles for ice travel.

It will be understood that the arrangement and construction of the pawls may be altered, if desired, to obtain the better results by increasing or diminishing the number, making the springs adjustable to secure different tensions, and changing the form of pawl herein illustrated and described.

On each side of the wheel B the runners D are pivotally secured to an extension d of the frame. These runners are formed of thin plates having concave faces d^2 , Fig. 5, and are connected by the pins d^5 at suitable points, preferably near their curved or turned-up ends, to allow full space for the pawls to operate as the machine travels forward.

The letter e^3 denotes a socket through which passes the steering-rod e^2 , which is capable of rotating therein, said rod having pivoted to its lower end a steering-runner E and at its upper end provided with steering-handle e^6 . The socket e^3 at its rear side is provided with two screw-threaded bosses to receive the similarly-threaded ends of the brace-rods e^4 e^5 .

The brake F, mounted on the pivotal pin h^2 of the rear runners D, is formed of a bell-crank lever provided with a pointed or tapered end f^2 for engagement with the surface of the ice. Motion is transmitted to the brake by means of a series of suitably-arranged levers and rods of the usual form now in use on bicycles.

In Figs. 2 and 3 I have illustrated one form of attachment whereby the forward runner F may be secured to the fork of a bicycle, and consists of a central rod G, bifurcated at its upper end and provided with straps g^2 g^3 , by which the branch arms g g are rigidly held

in position. About midway of the rod G is an upwardly-projecting arm g^3 , terminating in a socket g^4 , adapted to be secured on the wheel-shaft by nuts g^5 , as shown.

Figs. 4 and 5 illustrate the attachment for the rear runner D, which consists of the vertical brace-rods H, provided at their ends with sockets h h to receive bolts h^2 h^3 , by which it is secured in position. Second brace-rods H^2 are pivotally mounted at their lower ends on the pivoted pin h^2 and provided at their upper ends with straps h^4 , adapted to be secured on the frame of the machine, as shown.

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

1. In an ice-velocipede, the combination, with the frame and the steering-rod provided at its lower end with a pivoted runner, of the vertical brace-rods provided at their lower ends with a pivoted runner, the wheel provided with a series of pivoted spring-actuated pawls or catches upon each side, and the connection between said wheel and the treadles, substantially as described.

2. The combination, in an ice-velocipede, of the propelling-wheel provided with a series of pawls pivoted to each side thereof and pivoted together intermediate of their ends and the series of flat springs secured at one end of the said wheel and their free ends bearing against the intermediate pivots of the pawls, substantially as described.

3. The combination, with the fork of a velocipede, of the rod G, bifurcated at its upper end, forming two arms g g , provided with straps g^2 g^3 , by which it may be secured to said fork, the arm g^3 , adapted to engage with the wheel-shaft journaled in the lower ends of said fork, and the runner E, pivoted to the lower end of said rod, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

PHILIP H. CLASS.

Witnesses:

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