(No Model.)

J. E. LEAHAN.

ICE VELOCIPEDE.

No. 561,405. Patented June 2, 1896.

Fig. 1.

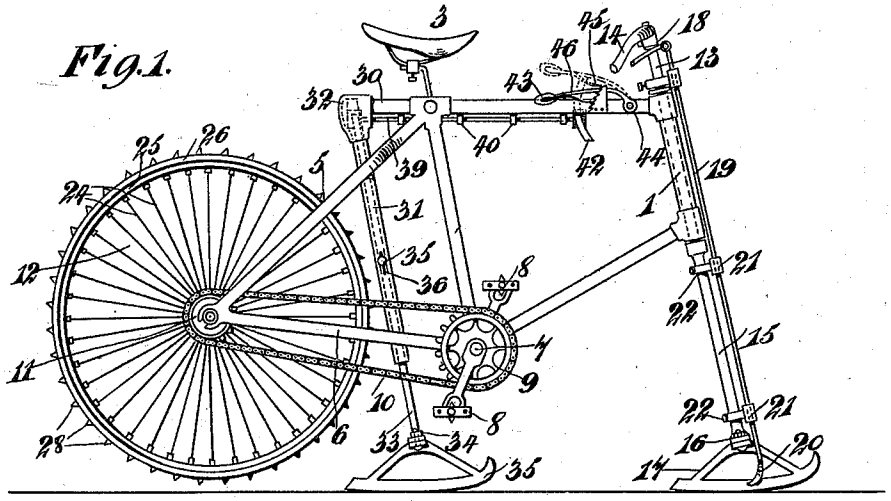

Fig. 2.

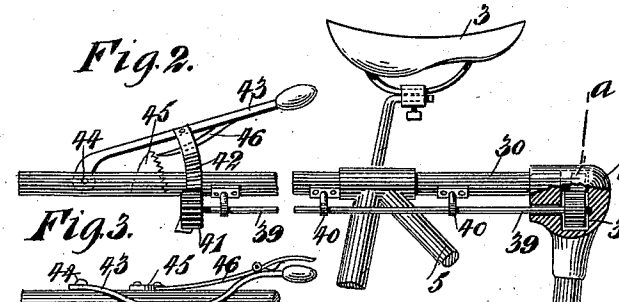

Fig. 3.

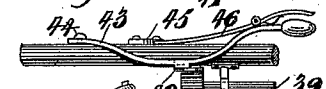

Fig. 4.

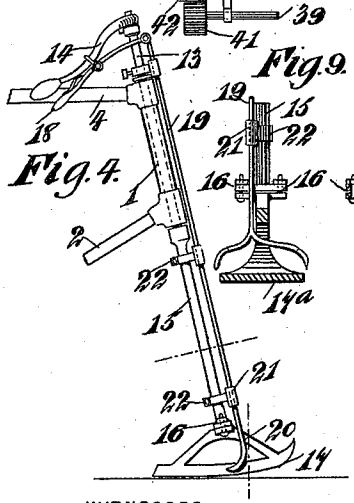

Fig. 9.

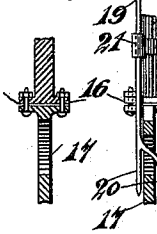

Fig. 7.

Fig. 8.

Fig. 5.

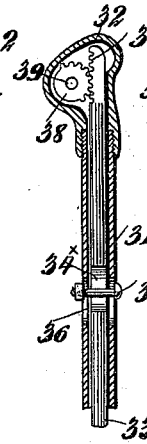

Fig. 6.

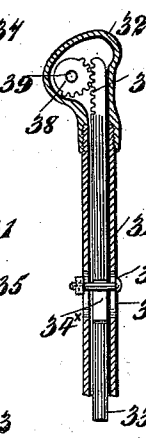

Fig. 10.

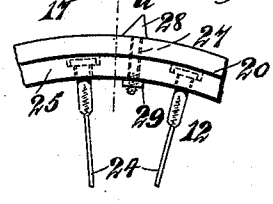

Fig. 11.

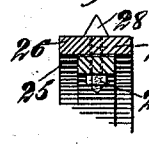

Fig. 12.

WITNESSES:

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ATTORNEYS

UNITED STATES PATENT OFFICE.

JAMES EDWARD LEAHAN, OF BOSTON, MASSACHUSETTS.

ICE-VELOCIPEDE.

SPECIFICATION forming part of Letters Patent No. 561,405, dated June 2, 1896.

Application filed January 8, 1896. Serial No. 574,718. (No model.)

To all whom it may concern:

Be it known that I, JAMES EDWARD LEAHAN, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and Improved Ice-Velocipede, of which the following is a full, clear, and exact description.

This invention relates to certain improvements in that class of devices commonly termed "ice-velocipedes," constructed on the principle of a bicycle and adapted to be propelled over ice or snow; and the object of the invention is to provide a device of this character of a simple and inexpensive construction which shall be light and strong and provided with means whereby when the device is used for coasting the least possible resistance will be offered to its passage over the ice.

The invention consists in an ice-velocipede having a frame provided with skates or runners and also provided with a driving-wheel adapted to be operated by the feet of the rider, one of the skates or runners being vertically movable, so as to be adapted to be raised or lowered to take the weight of the machine and rider off the driving-wheel or to raise said wheel entirely out of operative position.

The invention also contemplates certain novel features of the construction, combination, and arrangement of the various parts of the improved ice-velocipede whereby certain important advantages are attained and the device is made simpler, cheaper, and otherwise better adapted and more convenient for use than various other devices heretofore employed, all as will be hereinafter fully set forth.

The novel features of the invention will be carefully defined in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side view, drawn to a small scale, showing an ice-velocipede constructed in accordance with my invention. Fig. 2 is a fragmentary side view, drawn to a larger scale, showing the means for raising and lowering the rear skate or runner. Fig. 3 is a fragmentary view somewhat similar to Fig. 2, but showing the lever of the skate-raising device in plan. Fig. 4 is a fragmentary view showing the front part of the frame and the skate or runner employed for steering. Fig. 5 is a sectional view taken in the plane indicated by the line *a a* in Fig. 2 and showing the vertical slide-rod whereon the rear skate is held. Fig. 6 is a similar view showing said rod in its lowered position. Fig. 7 is a sectional view taken through the forward skate or runner and showing the means employed for securing the same to the steering-post. Fig. 8 is a somewhat similar sectional view showing the construction of the lower end of the brake. Fig. 9 is a view somewhat similar to Fig. 8, but showing the employment of a runner such as may be used when the machine is adapted for use on snow. Fig. 10 is a fragmentary view showing a portion of the wheel-rim. Fig. 11 is a transverse section through the rim, and Fig. 12 is a view showing the construction of the clip employed for holding the brake-stem to the steering-post.

In the views 1 indicates the head-bearing of the frame of the device, said frame being of the usual diamond pattern, but having its rear forks 5 and 6 made somewhat longer for purposes to be hereinafter explained, and in the lower portion of the frame is journaled in the usual way a crank-shaft 7, having pedals 8, and provided with a sprocket-wheel 9, over which passes a chain 10, gearing with the sprocket-wheel 11 on the hub of the rear driving-wheel 12, the construction of these parts being substantially the same as that ordinarily employed in bicycles.

The machine is provided with a handle-bar 13, having its opposite ends 14 bent and provided with grips to be operated by the rider in the usual way, and said handle-bar is fixed at its lower end to the steering post or head 15, mounted to turn in the head-bearing 1 of the frame, and having its lower end extended down adjacent to the ground and provided with oppositely-extending flanges 16, secured by means of bolts to similar flanges formed on the upper ends of a skate 17, as clearly indicated in Figs. 7 and 8.

A brake-lever 18 is mounted on the handle-bar in position to be conveniently operated by the rider, and is connected with a brake-stem 19, mounted to slide alongside the head-bearing 1, and extending down the same and also along the steering-post 15, being bifurcated at its lower end, as clearly seen in Fig.

8, and having its forks arranged in position when the brake-lever 18 is operated to be pressed against the ice upon opposite sides of the skate 17, as will be readily understood. The brake-stem 19 is mounted in clips having projecting perforated portions 21, through which the stem passes and provided with forks 22, arranged to engage the opposite sides of the steering head or post 15, to which they are clamped by means of a bolt or equivalent device 23, as seen in Fig. 12.

The driving-wheel of the device is provided with spokes 24, which may be of the kind usually employed in bicycle-wheels, said spokes being secured at their outer ends to a rim 25, whereon is carried a flat-faced tire 26, secured in place by means of bolts 27 passing through the tire and rim, and having heads or enlargements 28 of pointed or analogous form at their outer ends, the inner ends of said bolts being screw-threaded to receive nuts 29, whereby they are held in place, as will be readily understood. The points 28 serve to engage the ice or snow when the driving-wheel is operated to propel the velocipede.

The horizontal top brace of the frame, as shown in Fig. 1, extends from the head-bearing 1 beyond the rear forks 5, as indicated at 30, and the saddle 3 is, as shown in the drawings, arranged in the usual way at the junction between the top brace and the said forks. To the rear end 30 of the top brace of the frame is secured a downwardly-extending tube or brace-bar 31, attached at its upper end to said brace-bar by means of a casing 32, hollowed out and formed as indicated in Figs. 2, 5, and 6, and said tube 31 extends downward parallel with and just behind the rear vertical brace of the frame.

In the tube 31 is mounted to slide a supporting-bar 33, having its lower end flanged, as indicated at 34, and bolted or otherwise secured to the rear skate 35, and said supporting-bar is provided at its upper part with a vertical slot $34^{\times}$, formed through it and adapted for the passage of a guide-pin 35, herein shown as a bolt extending through slots 36, formed in the opposite walls of the tube 31, and secured in place in said tube by means of a nut. By means of this guide-pin the bar 33 is held against turning and is guided in its vertical movement.

The upper end of the bar 33 is flattened and toothed, as indicated at 37, to mesh with teeth formed on a circular rack or gear 38, secured within the chamber of the casing 32, being held on the rear end of a shaft 39, journaled in bearings 40 on the top brace of the frame and extending forward along said top brace to a point just in front of the saddle, where it is provided with a gear-wheel 41, meshing with a segment-rack 42, secured on a lever 43, pivoted, as seen at 44, to the top brace of the frame and adapted to be operated by the rider. A detent or pawl 46 is secured to the lever 43 in position to engage with a segment-rack 45, fixed to the top brace of the frame, so as to hold the lever 43 against movement when the skate 35 has been forced down, as will be hereinafter explained.

In operation the rear skate will be arranged so that when in its raised position the driving-wheel 12 will only touch the ice sufficiently to enable the points 28 to secure a firm hold in the ice, and under normal conditions the position of the rear skate will not be changed. In coasting, however, the lever 43 will be manipulated so as to turn the shaft 39 and force the rear skate 35 downward, so as to raise the driving-wheel 12 slightly, whereupon the said driving-wheel will be out of contact with the ice, and the whole weight will rest upon the two skates 17 and 35.

To stop the device, the brake-lever may be operated to press the brake-stem downwardly so as to engage the forked lower end thereof with the ice on opposite sides of the forward skate 17.

From the above description it will be understood that the device is of an extremely simple and inexpensive construction and is well adapted for use for the purposes for which it is designed, and it will also be understood that the invention is susceptible of considerable modification without material departure from its principles and spirit, and for this reason I do not wish to be understood as limiting myself to the exact form and arrangement of the parts herein set forth. For example, when constructed for ladies' use the forward portion of the top brace of the frame will be of course omitted or dropped in the usual way, and the lever 43 will be pivoted behind the saddle or in any other appropriate place, and when the device is to be used on snow flat and broad faced runners, such as those indicated at 17^{a} in Fig. 9, will be by preference employed in lieu of the skates 17 and 35.

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

1. An ice-velocipede, comprising a frame having a forward skate and a driving-wheel, and provided with a saddle, a tube extending downward from the upper portion of the frame, a supporting-bar arranged to slide in said tube, a runner carried on the lower end of said bar and arranged adjacent to the driving-wheel, and an operating device arranged when actuated to move said supporting-bar longitudinally to press the runner carried thereon downwardly, whereby the driving-wheel is raised from the ice, substantially as set forth.

2. In an ice-velocipede, the combination of a frame, a forward runner thereon, a driving-wheel, a tube extending downward on the frame, a supporting-bar mounted to slide in the tube, a rear runner carried on the lower end of the supporting-bar in position to engage the ice adjacent to the driving-wheel, the upper end of said bar being provided with teeth, a shaft extending longitudinally of the upper portion of the frame and provided with

a toothed rack engaging the teeth on the bar, and means for turning said shaft, substantially as set forth.

3. In an ice-velocipede, the combination of a frame having a forward runner and a driving-wheel, a supporting-bar mounted to slide downward on the frame, a runner carried on the lower end of said bar, a shaft extending longitudinally on the frame and adapted to be turned, and a connection between the shaft and said bar whereby when the shaft is turned the bar is moved downward, substantially as set forth.

4. In an ice-velocipede, the combination of a frame, a forward runner thereon, a driving-wheel, a supporting-bar mounted to slide downward on the frame, a rear runner carried on the supporting-bar, a rotative shaft extending horizontally on the frame, means for moving the bar downward when the shaft is turned, a gear-wheel on the shaft, and a lever pivoted on the frame and provided with a segmental rack to engage the gear-wheel, substantially as set forth.

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Witnesses:
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EDWARD J. BURKE.