

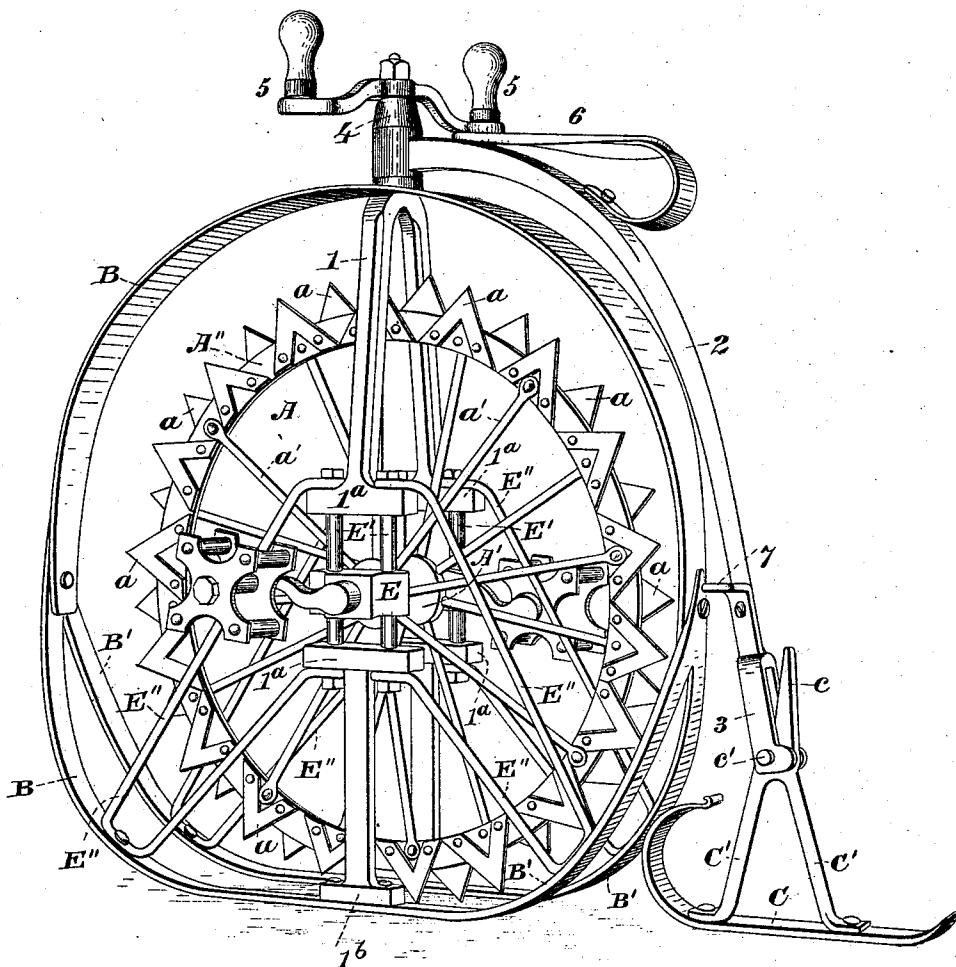
(No Model.)

E. F. BATCHELDER.

ICE VELOCIPEDÉ.

No. 369,224.

Patented Aug. 30, 1887.



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# UNITED STATES PATENT OFFICE.

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## ICE-VELOCIPEDE.

SPECIFICATION forming part of Letters Patent No. 369,224, dated August 30, 1887.

Application filed May 25, 1887. Serial No. 239,346. (No model.)

*To all whom it may concern:*

Be it known that I, EDWIN F. BATCHELDER, a citizen of the United States, residing at Concord, in the county of Merrimac and State of New Hampshire, have invented certain new and useful Improvements in Ice-Velocipedes, of which the following is a specification.

My invention relates to the construction of velocipedes designed to be used on ice or snow, having means for propelling and guiding somewhat in the same manner as an ordinary bicycle; and to these ends the invention consists, essentially, in providing the extremities of the front forks and backbone of an ordinary bicycle-frame with runners, the front forks being extended for the purpose.

It also consists in mounting a propeller-wheel between the front forks; and my invention relates more particularly to shielding this wheel and bracing the forks with the runners in such a manner as to give strength and stability to the structure.

Two other important features of the invention are the manner of mounting the propeller-wheel and means for limiting the swinging movement of the back runner.

In order that my invention may be more fully understood, I will proceed to describe it with reference to the accompanying drawing, which represents a perspective view of my machine.

1, 2, 3, 4, 5, 6, and 7 represent, respectively, the front forks, backbone, rear fork, head, handles, seat, and step of an ordinary bicycle, which, being of ordinary construction and all well known, need no specific description.

A is the propeller-wheel, having hub A', spokes a', and teeth or projections a, the rim being designated by A''.

B is the shield for said propeller-wheel, having secured to its extremities the runners B' B', on opposite sides of the wheel A, these runners being riveted to enlargements 1<sup>b</sup> at lower ends of the front fork.

C is the rear runner, carried by the prongs C', pivoted at c', and having vertical extension c, for limiting its rocking movement.

The spokes a' of the wheel are screwed into the hub and riveted to the rim alternately on opposite sides thereof, and the teeth a are triangular in shape, and also riveted alternately

on opposite sides of the rim. These teeth or projections are well adapted to engage the surface of the ice or snow, and are made thin, though thick enough for strength, to prevent any sidewise movement or slipping of the machine. The wheel is driven by ordinary cranks, to be operated by the feet of the rider.

In order to insure uninterrupted contact between the teeth of the wheel and the surface of the ice, and also to prevent the weight of the machine being borne by the wheel, and consequently taken off the runners—as, for example, when the machine passes over some unevenness in the surface—I provide a vertically-movable bearing for the wheel, which consists, essentially, of a block, E, mounted on two vertical rods, E' E' E' E', whose extremities are secured in enlargements 1<sup>a</sup> in the two parts of the fork, and on which the journal-block may freely slide. By this arrangement the wheel will be held in contact with the surface merely by its own weight and the pressure put upon it by the rider.

The shield is supported on the frame by passing the head or joint of the forks through a hole made therein. The extremities of this shield are bent down and riveted or otherwise secured to the meeting adjacent ends of the two front runners, which are brought together in such a manner that they spread the desired distance apart on the ground, being secured in this position by the braces E''. These braces E'' are formed of rods so bent as to extend downward from the forks at an angle, their extremities being secured by nuts to the extremities of the vertical slide-rods of the movable bearing. This arrangement, it will be seen, will give strength and stiffness to the structure and still not sacrifice an important and necessary feature of velocipedes—viz., lightness. The vertical arm on the rear runner-frame is designed to prevent the tipping forward of the runner when the same strikes any unevenness in the surface.

I am aware that it is not new to join the front and rear runners by a curved rod or bar conforming to the shape, and therefore do not claim this, broadly; nor is such the equivalent of my shield rigidly attached at its center to the joint of the forks, so as to be continually over the wheel and extend down in front and

behind in such a manner that the rider is prevented from coming in contact with the wheel when riding straight forward or turning, or even when handling the machine from the ground.

It is obvious that the shield could be secured in any convenient way to the braces, though it is preferred to gain strength and stability by connecting its ends to the ends of the runners, as shown; or the shield might be used without the lower connections—as, for example, on an ordinary bicycle.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. A propeller-wheel for ice-velocipedes, consisting of a hub, through the center of which is secured an axle, and having screwed into it the spokes, the other ends of which spokes are riveted alternately on opposite sides of a flat metallic rim, to which are also riveted inverted-V-shaped teeth, substantially as herein shown and described.

2. In an ice-velocipede, the combination of the toothed wheel and supporting-frame, substantially as herein described, with a curved shield supported on said frame and having its extremities secured to the meeting adjacent extremities of the runners, as and for the purpose set forth.

3. The combination, with an ice-velocipede having a propeller-wheel with bearings in vertically-movable blocks E, mounted on rods

E' E', interposed in the forks, of runners on which said forks rest, whereby the wheel may readily pass over any unevenness, as described.

4. In an ice-velocipede, the combination, with the front forks carrying the movable bearings consisting of blocks E and nutted rods E', of the braces E'', having their extremities secured by said nutted rods E' and bent portions secured to the runners, as shown.

5. The combination, with an ice-velocipede, of the runner C, carried by fork C' C', which has vertical extension e, the whole pivoted in fork 3, as and for the purpose set forth.

6. The combination of forks 1, having interposed vertical rods E' E', braces E'' E'', secured by nuts on the ends of said vertical rods, runners B' B', shield B, wheel A, having the movable bearing-blocks E, sliding on rods E', and cranks D, with handle 5, saddle 6, and backbone 2, having step 7 and pivoted runner C, all arranged substantially as herein shown and described.

7. A fork for ice-velocipedes, having the arms separated and the parts having enlargements 1<sup>a</sup>, for making connection with the runners by rivets or screws and to the adjacent end of the arm by nutted rods E' E', said nutted rods being also adapted to secure the ends of braces, as herein shown and described.

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Witnesses:

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