(Model.)

W. J. VERNIER.

ICE PLOW TOOTH.

No. 260,914. Patented July 11, 1882.

Fig. 1.

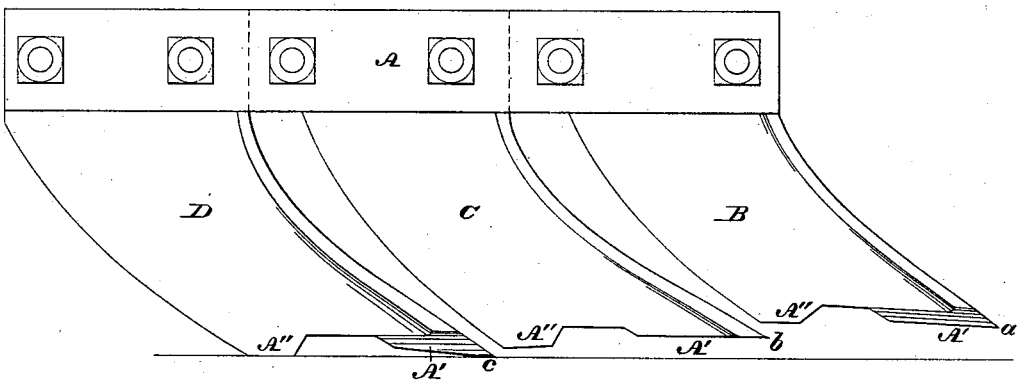

Fig. 2.

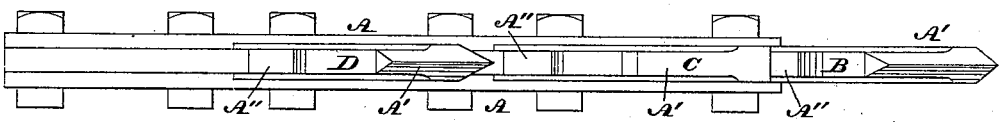

Fig. 3.

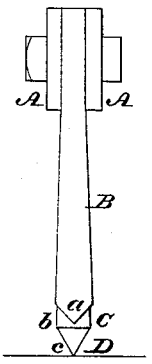

Fig. 4.

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UNITED STATES PATENT OFFICE.

WILLIAM F. VERNIER, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE KNICKERBOCKER ICE COMPANY, OF SAME PLACE.

ICE-PLOW TOOTH.

SPECIFICATION forming part of Letters Patent No. 260,914, dated July 11, 1882.

Application filed September 2, 1881. (Model.)

To all whom it may concern:

Be it known that I, WILLIAM F. VERNIER, a citizen of the United States, residing in the city and county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Ice-Plow Teeth, which improvement is fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is a side elevation of the ice-plow teeth embodying my invention. Fig. 2 is a bottom view thereof. Fig. 3 is a front end view thereof. Fig. 4 is a diagram illustrating the operation of the teeth.

Similar letters of reference indicate corresponding parts in the several figures.

My invention consists of an ice-plow tooth provided with a V-shaped cutting-point and a V-shaped shoe, whereby the tooth is guided and caused to run true and smooth in the groove formed by the point.

It also consists of the combination of teeth, the construction and operation being hereinafter set forth.

Referring to the drawings, A represents the beam or bars of the plow, to which the handles are attached.

B C D represent ice cutting or grooving teeth, which are connected to the beam and arranged one behind the other, a space intervening between adjacent teeth for cleaning purposes, a suitable number of such teeth being connected to the beam, but three being shown in the present case. On the bottom edge of each tooth, at the front thereof, is a shoe, A′, which extends horizontally rearward from the cutting-point, so that after said point has cut a groove the shoe runs in the same, and thus sustains the front of the tooth, acting as a guide therefor. On the bottom edge of the tooth, behind the cutting-point or behind the shoe, is a downwardly-projecting heel, A″, whereby when the point has penetrated the ice a certain extent the heel prevents the penetration thereof to a greater extent, and thus the required groove is formed in the ice without the liability of the tooth cutting abruptly downward or to an undesirable extent. The heel also sustains the rear of the bottom edge of the tooth, and this, assisted by the front shoe, causes the bottom of the tooth to be sustained at both ends, whereby the tooth runs true and uniform.

The point *a* of the tooth B is V-shaped, the point *b* of the tooth C right-lined, and the point *c* of the tooth D V-shaped. The shoes A′ are also V-shaped, the points or angles being below, so that their sloping sides, as formed, are in contact with the sloping walls of the groove in the ice. The width of the points *a c* is greater than that of the body of the tooth B or D, and the width of the point *b* is greater than that of the body of the tooth C.

It will be noticed that the teeth increase in depth, the front tooth, B, being the shortest and the rear tooth, D, the longest.

When the plow is drawn forward the point *a* of the tooth B is presented to the ice and cuts into the same, forming a V-shaped groove, the angle whereof is centrally at the bottom. The tooth C then enters the groove and deepens the same, producing a right-lined bottom, and the tooth D, following, still further deepens the groove, leaving the bottom of the same of V shape.

As the point *a* is greater in width than the body of the tooth B, it is evident that the friction of ice with the sides of said body is avoided, as the body is relieved of contact with the wall of the groove. The shoe A′ therefore serves to steady the tooth, as its sloping sides, which also provide increased surfaces, run smooth and true on the walls of the groove as formed by the point *a*, the other shoes A′ serving to guide the remaining teeth, which are supplied with such features on their bottoms. The shoe A′ of the tooth C is flat and serves to guide said tooth.

The operations of grooving or furrowing ice are vastly increased by the employment of the differential teeth B C D. When the V-groove is formed by the tooth B the tooth C removes the angular bottom thereof, the sides of said bottom readily yielding to the right-lined point *b*. The tooth D cuts into the right-lined bottom formed by the tooth C, producing by its point *c* a deeper groove, the bottom of which is left V-shaped, this being more readily accomplished than deepening the groove by a right-lined point were the point *c* of such form. The ice is thus grooved, the bottom of the groove

being of V shape, as has been stated, so that when the ice is to be formed into blocks the bar or tool usually employed is struck into the groove, the blow being directed against the angle thereof, the effect whereof is to break, cut, or crack the ice straight down, thus producing regular and uniform blocks of ice, it being noticed that the bar or tool is readily directed to the center of the bottom of the groove, owing to the central position of the angle of the same.

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

1. An ice-plow tooth having a V-shaped cutting-point, and a V-shaped shoe which extends rearward from said cutting-point on the bottom of the tooth, substantially as and for the purpose set forth.

2. An ice-plow tooth having a V-shaped point, a V-shaped shoe, and a heel, substantially as and for the purpose set forth.

3. The tooth B, with a V-shaped point, a V-shaped shoe, and a heel, the tooth C, with a shoe and heel, and the tooth D, with a V-shaped point, a V-shaped shoe, and a heel, combined as described, said teeth increasing in depth in their order, for the purpose set forth.

WILLIAM F. VERNIER.

Witnesses:
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