C. A. & T. L. HILES.

ICE-PLOW.

No. 190,216. Patented May 1, 1877.

Fig.1

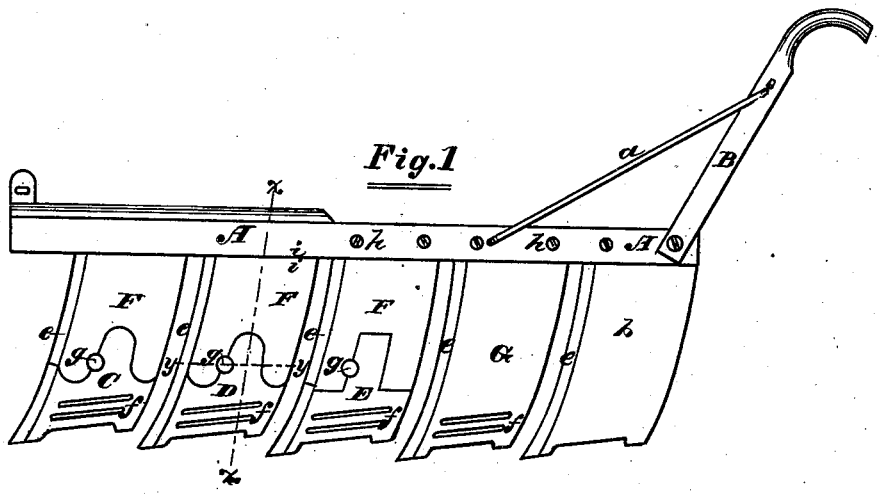
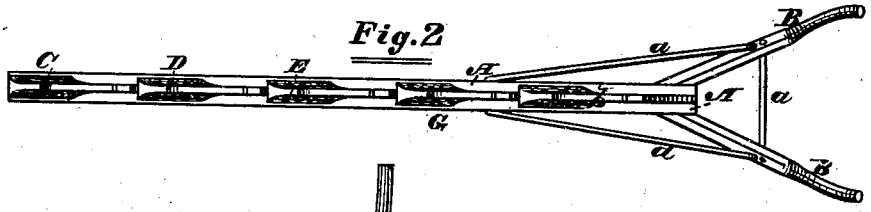


Fig.2



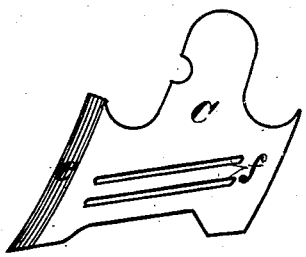


Fig.3

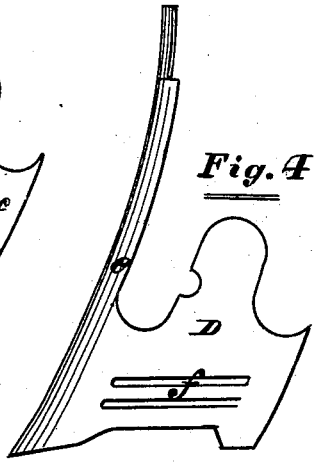


Fig.4

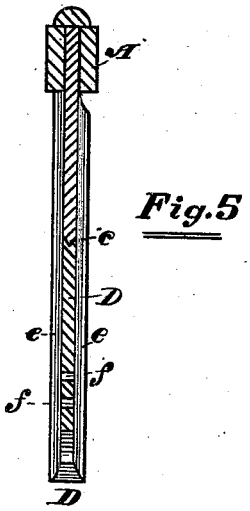
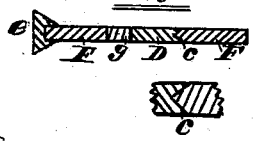


Fig.5

Fig.6



Attest

William B. Judson

Albert H. Hitchcock

INVENTORS:

Charles A. Hiles

Theron L. Hiles

UNITED STATES PATENT OFFICE.

CHARLES A. HILES AND THERON L. HILES, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN ICE-PLOWS.

Specification forming part of Letters Patent No. **190,216**, dated May 1, 1877; application filed November 29, 1876.

To all whom it may concern:

Be it known that we, CHARLES A. HILES and THERON L. HILES, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Ice-Plows; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to that class of ice-cutting implements known as "ice-plows," its object being to lessen the cost of manufacture of such plows, and to furnish a cheap and effective means of reconstructing the kinds now in common use, after they are worn out, in such manner as to renew their cutting qualities, and render them as good as new plows.

In the annexed drawings, Figure 1 is a side elevation of an ice-plow. Fig. 2 is a bottom view of the same. Fig. 3 is a side elevation of a removable point or bottom detached. Fig. 4 is a side view of a modified form of removable point or bottom. Fig. 5 is an enlarged section of removable point or bottom, taken on the line *x x;* and Fig. 6 is a section of same, taken on the line *y y.*

A represents the plow beam or frame; B, the handles. *h* are rivets. *a* are braces, and *b* represents a tooth or cutter, as commonly constructed.

The objection to this style of tooth, is that through the constant filing and dressing necessary to keep it in good cutting order, it soon becomes worn out, or, at least, too short to be effective; also, should the bottom of one tooth become broken, all the rest must be dressed off to make them of uniform length.

As these teeth are made of fine steel, the cost of supplying entire new ones would be very great.

To obviate these difficulties we construct a removable point or bottom, C, to be applied to ice-plow teeth, as hereinafter set forth in detail. The point or bottom is constructed of the same material used in making ice-plow teeth, commonly steel, and may be made in either of the forms, C, D, or E, shown in the drawing. Its lower edge is shaped like the bottom of an ordinary tooth, while its upper edge is provided with a groove to receive a corresponding tongue on the lower edge of the base or socket F, as illustrated more fully at *c* in the enlarged sections, Figs. 5 and 6.

The front or cutting edge of the tooth is provided with a tongue, *e*, which is designed to make the cut in the ice of sufficient width to admit of the free and easy passage of the heel of the tooth. Slots or perforations *f* are made in the removable teeth to facilitate the maintenance of the proper shape of the bottom. After it becomes worn and dull, the operator has only to cut through to the slot at each end, which removes the intervening piece in much less time than if the plate were solid.

The style of tooth commonly in use may be made with these slots, as shown at G, thus affording the same facilities for maintaining the proper form of bottom, as claimed for the same in the removable points or bottoms.

D and E represent modified forms of removable points or teeth.

The removable point is held firmly in place in the base or socket F by means of the arrangement of tongue and groove *c* and the rivet *g*, one-half of the rivet-hole being made in the removable point, and the other half in the base or socket F.

If desired, the beam A and teeth *b* G, or sockets F, may be made of one solid piece, thus saving the labor of making and fitting the two pieces, together with the extra labor of fastening in the teeth.

For use in teeth which are thus made solid with the beam, we construct the removable point, as at D, with tongue *e* of sufficient length to extend to the beam A, the tongue being provided with a groove, into which fits a tongue made upon the front edge of the socket F, in the same manner as shown at *c* in Figs. 5 and 6.

This construction and arrangement of the tongue *e* imparts additional strength and rigidity to the tooth, secures a more perfect centering, and prevents the tooth from wabbling.

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

1. A removable ice-plow tooth having slots

f and tongue *e*, substantially as and for the purpose specified.

2. The combination, in an ice-plow, of the beam A, base or socket F, and removable tooth C, provided with slots *f* and tongue *e*, substantially as and for the purpose set forth.

In testimony whereof we have hereunto affixed our signatures this 24th day of November, 1876, in presence of two witnesses.

CHARLES A. HILES.
THERON L. HILES.

Witnesses:
WILLIAM B. JUDSON,
ALBERT H. HITCHCOCK.