

UNITED STATES PATENT OFFICE.

WASHINGTON BENSON, OF GRINNELL, IOWA.

IMPROVEMENT IN THILLS.

Specification forming part of Letters Patent No. **184,578**, dated November 21, 1876; application filed September 30, 1876.

To all whom it may concern:

Be it known that I, WASHINGTON BENSON, of Grinnell, in the county of Poweshiek and State of Iowa, have invented a new and valuable Improvement in Thills; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

The figure of the drawings is a representation of a plan view of my thill.

The object of this invention is to allow the draft-horse of a wagon or sled to tread upon that part of the road which is smoothest and firmest without removing the wheels or runners from the ruts. This I accomplish by curving or bending both the thills to one side, and providing the whiffletree with a compensating attachment, whereby the draft is made perfectly even and central, as hereinafter set forth.

In the annexed drawings, A is the front axle of a buggy or other wheeled vehicle; and B B' are the thills or shafts of the same, which are secured to said axle near the ends thereof by clips *b b*. C is a cross-bar connecting said thills.

Thill B is first bent inward at *b*¹ toward the line of draft; then turns outward and inward in a slight curve, *b*², so as to make room for the hind quarters of the horse, and finally ends in a slight outward bend, *b*³, which is almost in the direct longitudinal central line of said vehicle. Thill B' is at first extended straight forward at *b*⁴; then is bent into a curve, *b*⁵, which is larger than *b*², and opposite thereto, serving the same purpose, and finally terminates at *b*⁶, almost directly in front of its point of attachment to axle A. This shape of the thills causes the horse to be placed on one side of the central longitudinal line of the said vehicle, so that when the wheels are in the ruts the horse's hoofs tread upon the firmest and smoothest part of the track, which is one of the two strips of firm earth intervening between the wagon-wheel ruts, and the unworn place in the center.

Said smooth or firm strips are worn by the hoofs of previously-passing horses driven in double team.

To the end of cross-bar C that is opposite to the direction in which said thills are bent, I pivot at *d* an equalizing-lever, D. E is a whiffletree secured by clip or strap *e* to the front of the long arm of said lever D. F is a metal brace-rod, extending diagonally from the end of the short arm of equalizing-lever D to the rear end of thill B', where it is secured by clip *f*. G is a metal draft-rod, similar in its construction to brace-rod F, and extending from the middle part of the long arm of lever D across said rod F to the rear end of thill B, where it is secured by clip *g*. The long end of said lever D, carrying said whiffletree is, of course, on the side nearest to the horse.

The operation of said pivoted lever D and rods F G is to make the line of draft coincide with the central longitudinal line of the vehicle, so that the vehicle may be drawn straight forward, keeping its wheels in the ruts, although the horse is on one side of said central longitudinal line.

By means of the above devices the horse is allowed to have the firmest attainable footing, while the wagon-wheels meet with the least resistance possible under the circumstances. Said devices (including the bent thills) are applicable to sleighs as well as to wheel vehicles, and with the same advantages.

The curvature of the said thills B B' is not necessarily precisely as shown, but may be varied so as to conform to the size and construction of the vehicle.

The arrangement, construction, and methods of attachment of the remaining devices, may also be modified in various ways without departing from the spirit of my invention.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a vehicle, a pair of thills curved toward one side of said vehicle, substantially as and for the purpose set forth.
2. Equalizing-lever D, having a whiffletree

attached to its long arm, in combination with cross-bar C, rods F G, and thills B B', all substantially as set forth.

3. The combination, with a pair of thills bent to one side, as shown and described, of the equalizing devices, substantially as described, and for the purpose set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

WASHINGTON BENSON.

Witnesses:

ROBERT M. HAINES,
HENRY S. MARVIN.