W. WHARTON, Jr.
Shovels.

No. 213,019. Patented Mar. 4, 1879.

FIG. 1.

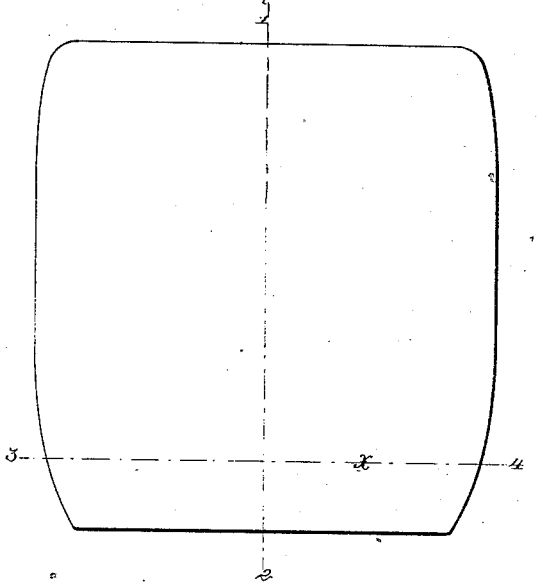

FIG. 2.

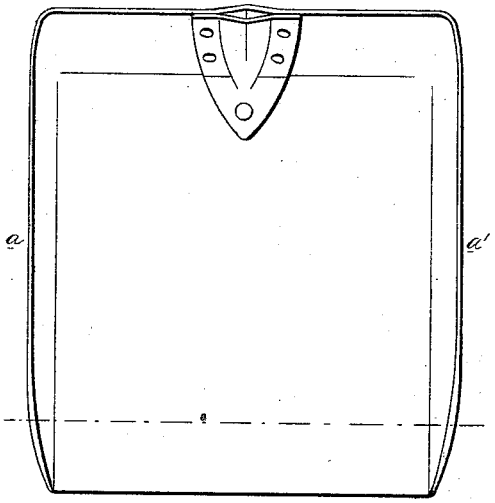

FIG. 3.

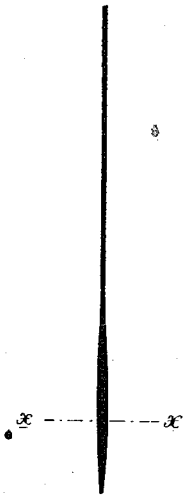

FIG. 4.

Witnesses
Henry Howson Jr.
Harry Smith

Inventor
William Wharton Jr.
by his Attorneys
Howson and Son

UNITED STATES PATENT OFFICE.

WILLIAM WHARTON, JR., OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN SHOVELS.

Specification forming part of Letters Patent No. **213,019**, dated March 4, 1879; application filed December 2, 1878.

To all whom it may concern:

Be it known that I, WILLIAM WHARTON, Jr., of Philadelphia, Pennsylvania, have invented a new and useful Improvement in Shovels, of which the following is a specification:

The object of my invention is to so graduate the blade of a shovel in thickness that it will resist abrasive action much longer than the blades of ordinary shovels.

In the accompanying drawings, Figure 1 is a view of my improved shovel-blade blank. Fig. 2 is a front view of the finished blade. Fig. 3 is a section of the blade-blank on the line 1 2; and Fig. 4 is a section on the line 3 4, showing a modification.

The blades of shovels, especially when used on gravelly soil, are so abraded by the latter that they soon become thin, and finally useless, the part of the blade which is the first to yield to this friction being at and near the dotted line shown in Fig. 2.

In order that the blade may be more enduring at the part where it is subjected to the greatest wear, I make it thicker at that part.

The blade-blank, Fig. 1, for instance, is so rolled as to be thickest at and near the dotted line *x*, the extra thickness being uniform for some distance above and below this line, and then gradually merging into the ordinary thickness of a shovel-blade, as shown in Fig. 3.

When the blank has been converted into a shovel, in the usual manner, it will be re-enforced throughout its entire width—that is, from one edge, *a*, to the opposite edge, *a'*—as shown in the front view, Fig. 2, in which, however, the graduated thickness is exaggerated in order to clearly illustrate my invention. It will be seen that by this increased thickness the desired re-enforcement is obtained, and that by the gradual merging of the thick into the thinner portion of the blade both the front and back of the same will present uniform smooth surfaces, uninterrupted by abrupt projections or ribs, and consequently that the blade will enter the soil as freely as an ordinary blade.

It is not essential to my invention, however, that the extra thickness of metal should extend entirely across the blade, for the latter may be of the usual thickness at and near the opposite edges, *a a'*, so that a section on the line 3 4 will have the appearance shown in Fig. 4, which is also exaggerated, for the above reason.

I claim as my invention—

A shovel-blade re-enforced in thickness at and near the point shown and described, the thick portion gradually merging into the thinner portion, so that the front and back of the blade shall present uniform surfaces free from abrupt ridges and projections, as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM WHARTON, JR.

Witnesses:

HENRY HOWSON, Jr.,

HARRY SMITH.