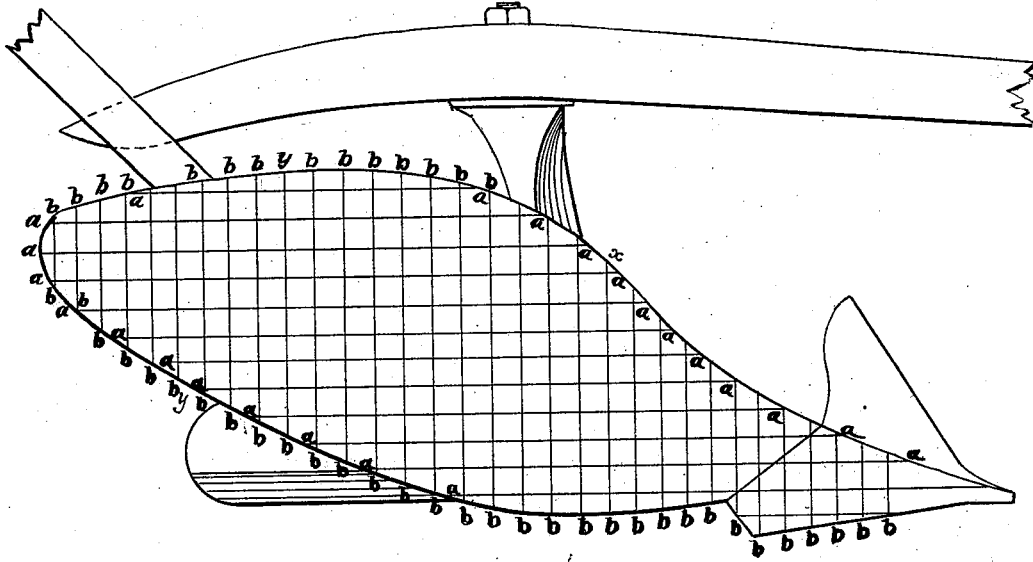


J. LONG.  
Plow.

No. 207,751.

Patented Sept. 3, 1878.



Witnesses

*John Lockie*  
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# UNITED STATES PATENT OFFICE.

JOHN LONG, OF MASSILLON, OHIO.

## IMPROVEMENT IN PLOWS.

Specification forming part of Letters Patent No. **207,751**, dated September 3, 1878; application filed August 24, 1878.

*To all whom it may concern:*

Be it known that I, JOHN LONG, of Massillon, in the county of Stark and State of Ohio, have invented certain Improvements in Plows, of which the following is a specification:

This invention relates to improvements in the conformation of the mold-board of a plow, whereby the furrow is laid more evenly and regularly, all of which will be hereinafter more fully described.

The figure represents a plow having a mold-board formed according to my invention.

Mold-boards for plows have sometimes been made somewhat like this mold-board, but without any definite plan as to the laying of the furrows with just regularity and with reference to the smoothness of the surface after the plowing is completed.

In this invention the mold-board is curved by a convex face vertically extending from the back part toward the middle section at or near the standard, and from that point concaved toward the toe or share-point, so that the following conditions will result, viz: On all the horizontal sections, at any distance apart, a straight edge will touch the entire length of the mold-board from the heel to the toe-point, as represented in the figure by lines *a a*; also, that on all vertical lines, as shown at *b b*, a straight edge will touch every part of the mold-board throughout its whole length from heel to toe. This is produced by the exact conformation of the mold of the board by calculation of the geometrical development of the plane surface. It is true that in every form of warped surface some straight lines on that surface may be obtained; but to preserve the unities of effect in these horizontal lines in the direction of the draft, and also keep the vertical lines, or those nearly vertical, trans-

verse to the other, has in this case been the result of careful investigation, study, and invention, whereby valuable results have been obtained; first, in making a straight furrow by the directness of the mold-board in all its horizontal sections; secondly, that the mold-board, as it slides under the sod or earth, presents at every section vertically a straight line, thus reducing the friction to a minimum; and these two conditions practically offer less resistance to the draft than where the mold-board is merely warped without this feature. The same curves of the mold-board are continued along the upper surface of the share or toe-piece as if it were a part of the mold-board, so that the same horizontal straight lines are continued to its extreme end, as also the vertical lines are continued to be straight.

What are called horizontal lines refer to lines drawn parallel to each other and to the bottom line of the plow, and the vertical lines those transverse to the horizontal lines just explained.

I claim—

1. A mold-board for plows curved, substantially as described, vertically and longitudinally, so that all horizontal sections shall preserve a straight line, and also the vertical sections be in straight lines, substantially as and for the purpose set forth.

2. The combination of the mold-board and share herein described, to constitute but one continued warped surface, having the straight horizontal lines continued from heel to point, and the system of vertical lines also continued over the share, substantially as and for the purpose described.

JOHN LONG.

Witnesses:

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