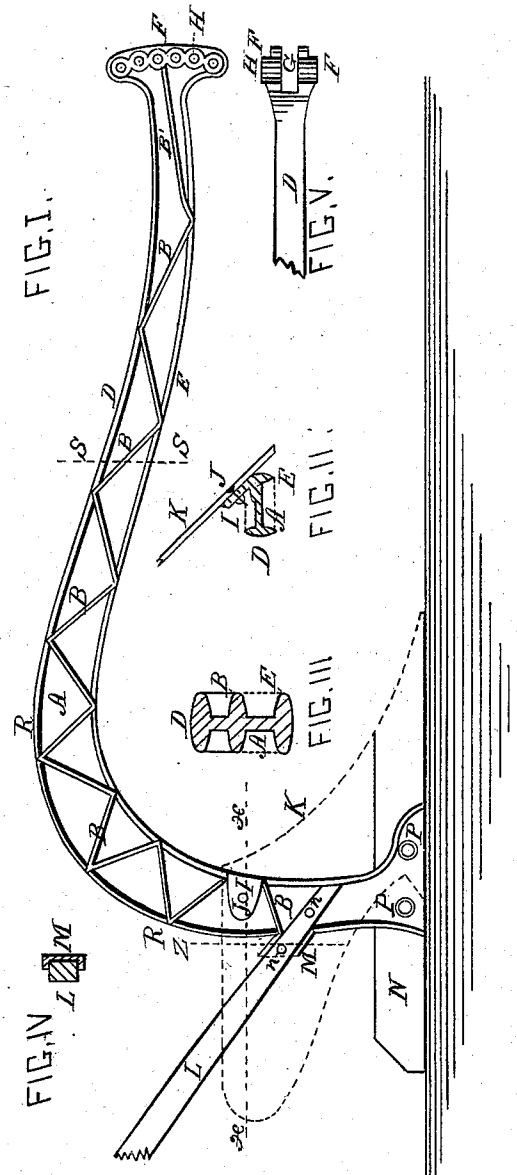
J. C. BUTTERFIELD.

Plow-Beams.

No. 150,524. Patented May 5, 1874.



WITNESSES

G. L. Chapin

INVENTOR

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JOHN C. BUTTERFIELD, OF CHICAGO, ILLINOIS, ASSIGNOR TO HIMSELF AND BYRON C. BRADLEY, OF SAME PLACE.

IMPROVEMENT IN PLOW-BEAMS.

Specification forming part of Letters Patent No. **150,524**, dated May 5, 1874; application filed February 7, 1874.

To all whom it may concern:

Be it known that I, JOHN C. BUTTERFIELD, of Chicago, in the county of Cook and State of Illinois, have invented an Improvement in Plow-Beams, of which the following is a specification:

A plow-beam is subjected to strains in every direction of flexion and torsion. The ordinary trussed beams are, therefore, insufficient in strength, because they are only calculated to resist strains in definite directions. I am aware that plow-beams have been made of cast metal with lateral flanges on the two edges, like an ordinary girder, and do not claim to have invented that form of plow-beam. Such beams require a thickness of web which makes them objectionably heavy when sufficiently strong to withstand the strains to which they are subjected, said strains being combined flexion and torsion, and producing a constant tendency to buckle in the web.

My invention is principally designed to remedy this defect in ordinary cast plow-beams, by combining, with a continuous web and lateral flanges at the edges thereof, diagonal truss-ribs, extending from one edge flange to the other, and the whole cast solid in one piece, whereby the web may be made very thin, and the aggregate weight very much reduced, while the mutual support offered by the continuous web lateral flanges and diagonal ribs, each to the other, is such that the beam so constructed is enabled to withstand all the strains to which it can be subjected equally well with the ordinary beam of much greater weight. My invention therefore consists, first, of a plow-beam constructed of a thin web, provided with flanges along each edge, and extending laterally on either side thereof, and diagonal truss-ribs extending from one flange to the other, and on each side of said web, the whole cast solid in one piece; and, second, in a beam constructed with thin web, lateral flanges, and diagonal ribs, and provided with permanent seats for the attachment of the land-side, mold-board, land-side handle, &c.

That others may more fully understand my invention, I will particularly describe it.

A is the web of my beam, made with an edgewise curve, as shown in Fig. 1, to adapt it to the purposes of a plow-beam. Along each edge of said web are flanges D E, extending laterally on both sides thereof, and diagonal truss-ribs B B extend across the web A, connecting the said flanges D E on each side of the said web. The plow-beam is subjected to the severest strain at or near the point R, and therefore the web A is given a greater width near that point than elsewhere. One of the objects of my invention is to produce a metallic plow-beam as a separate article of manufacture, to which the land-sides and mold-boards of different patterns may be applied. To this end the rear portion of my plow-beam is curved downward, and extended to the level of the bottom of the land-side, and is widened a little, as shown at P P. On one side it is provided with a seat, and with holes for bolts to rigidly secure the land-side plate N. On the opposite side of the beam, at about the height of the top of the mold-board, I form a lug, I, extending obliquely outward and backward from the front edge of the beam, for the convenient attachment of the mold-board K, a bolt, J, being used for that purpose. I also provide a flanged seat, M, for the land-side handle L, the same being secured by bolts *n n*. At the front end of the beam I make lateral and vertical extensions, as shown at F, Figs. 1 and 5, so as to receive a vertical slot, G, and a series of holes, H, through either one of which a pin may be placed to adapt said slot to the purposes of a clevis for the attachment and regulation of the draft. The above-described beam, constructed with web A, flanges D E, and truss-ribs B B, is cast in one piece, so that said parts are all homogeneously united to and support each other.

After being cast, as described, I propose to submit my plow-beams to a process whereby the iron will be converted into steel, such as the process worked by the Jackson Steel Company, of Pittsburg, Pennsylvania. The strength of the beam is very greatly increased in proportion to its weight by this conversion.

Having described my invention, what I claim as new is—

1. A plow-beam having a web, A, lateral flanges D E along the edges thereof, and di-

agonal truss-ribs B B, all substantially as described, and made solid in one piece.

2. A cast-metal plow-beam with a web, A, flanges D E, diagonal ribs B B, permanent clevis G, and seats for the permanent and ready attachment of the land-side, mold-board, and land-side handle, constructed substantially as described, as a new article of manufacture and trade.

JOHN C. BUTTERFIELD.

Witnesses:
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