A. J. BONANDER.

Improvement in Plows.

No. 131,243. Patented Sep. 10, 1872.

Fig. 1.

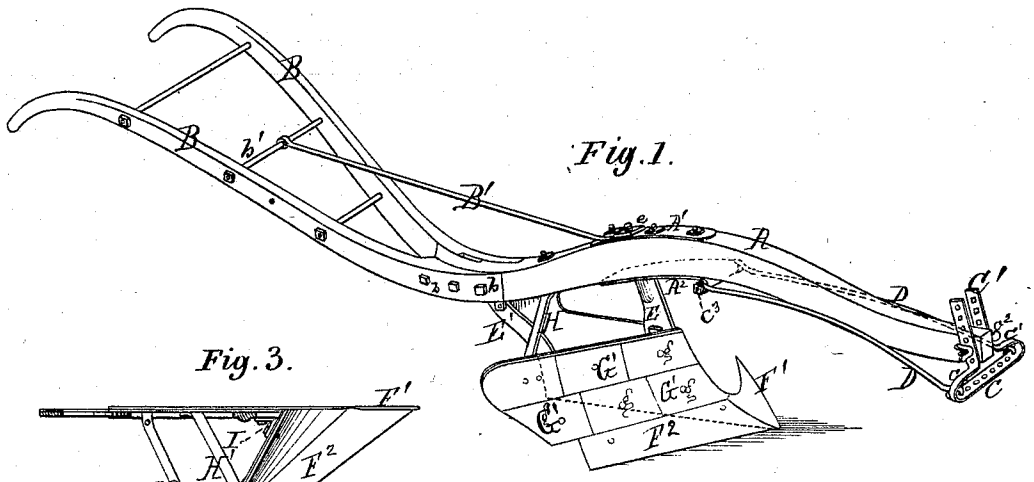


Fig. 3.

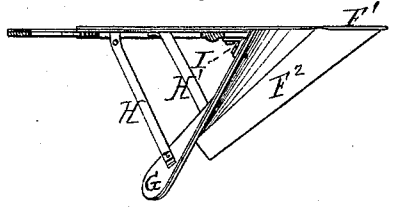
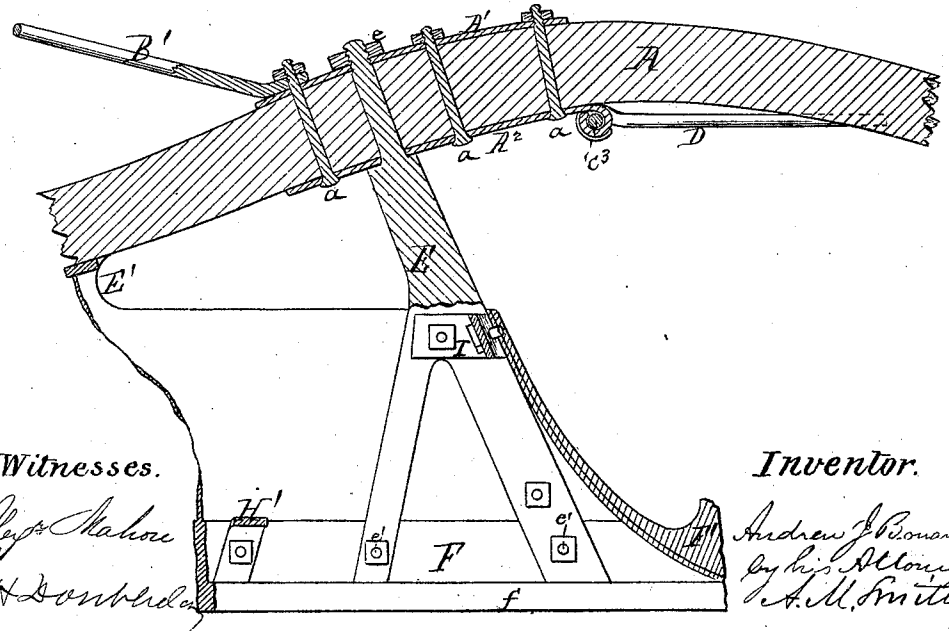


Fig. 2.



Witnesses.

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UNITED STATES PATENT OFFICE.

ANDREW J. BONANDER, OF ROCKFORD, ILLINOIS.

IMPROVEMENT IN PLOWS.

Specification forming part of Letters Patent No. **131,243**, dated September 10, 1872.

SPECIFICATION.

To all whom it may concern:

Be it known that I, ANDREW J. BONANDER, of Rockford, in the county of Winnebago and State of Illinois, have invented a new and useful Improvement in Plows; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawing and to the letters of reference marked thereon.

Figure 1 is a perspective view of a plow embodying my improvements. Fig. 2 is a vertical longitudinal section of the central portion of the beam.

Similar letters of reference denote corresponding parts in both figures.

The invention consists in a novel construction, combination, and arrangement of draft and brace rods, strengthening-plates, and draft-yoke with the beam, handles, and metal portions of a plow, whereby economy, strength, lightness, and efficiency of operation are secured, as will be hereinafter set forth.

In the drawing, A is the beam, curved by preference in about the form shown. A^1 A^2 are metal plates serving to strengthen the central portion of the beam, the lower one, A^2, forming a support to which the draft-rods are applied, as will be hereinafter explained. B B are the handles secured to the beam by bolts *b*, or by means of a socket on the end of the beam. B′ is a brace extending from the handles to the beam. It may be applied to one of the transverse rods *b*′, as shown, or to one of the handles direct. C C′ is the draft-yoke to which the team is attached. This yoke consists of a horizontal bar, C, provided with a series of perforations, to which the whiffletrees are attached in different positions, as may be required to run the plow to or from land. The vertical arms C′ are made in one piece with the horizontal bar C, and are connected therewith by the curved or angular shanks *c* c^1, the whole being formed, swaged, or cast into the shape shown in the drawing. The arms C′ of the yoke (between which the beam is secured) are also perforated at suitable intervals for the reception of a bolt, c^2, whereby the draft is adjusted vertically for the purpose of varying the depth at which the plow shall run. D D are draft-rods, the front ends of which are attached to yoke C C′, their rear ends being secured to a pin or bolt, c^3, clasped in the front end of the plate A^2, as is plainly shown in Fig. 2. E is a Y-shaped standard, (made preferably of cast-iron,) the shank of which passes through the beam, fitting closely in slots formed for its reception in plates A^1 A^2, and is secured firmly in place by a nut, *e*, or its equivalent. E′ is another standard supporting the heel end of the land-side. F is the sole of the land-side. It is provided with a rib, *f*, on its lower or wearing surface, upon which the standards E E′ rest, thus assisting the bolts *e*′, and relieving them materially from the downward thrust thrown upon them from the beam. F^1 is the point, and F^2 the share, all of which parts—that is, the sole-point and share—may be made in one piece when desired, the share being supported in a manner which I will soon explain. As the wearing-surface of this plow is made of steel it is desirable, for many reasons, that it should be made as light as possible, while at the same time a certain amount of strength is required. Hence I construct the plow in sections, and attach the steel portions to a skeleton or frame of either iron or untempered steel. In the drawing, G represents a mold-board form—that is, an iron or steel mold-board—of the outline or conformation which I desire to give to the steel mold-board when it is completed. G′ are plates of tempered steel, usually six in number, as shown. They are attached to mold-board form by taper-headed bolts *g* fitted to corresponding countersunk holes in said plates. Form G is wider than the space occupied by plates G′, and projects below them in such manner as to afford a support for the share F^2, said share being secured by bolting or riveting. Form G is secured to standard E by means of an angle-iron, I, (see Fig. 3,) at its front upper corner, and to the land-side or beam, or both, by braces H H′. By this construction and combination of parts I am enabled to produce a plow which has the requisite strength and stiffness, and which may be at any time readily taken apart for the purpose of replacing or repairing any of the parts.

From the above description it will be seen that each and all of the devices by means of which the plow is drawn or handled are especially adapted to each other and to be com-

bined in one organization. Thus the plates A^1 A^2 serve to strengthen the beam at the point where the plow-standard passes through it, and the brace B′ effectually supports the handles B B. The draft-yoke C C′ is also by its construction particularly adapted to be used in this specific combination, the arms C′ passing upon each side of the beam and adjusted thereon by means of bolt c^2 enable the operator to regulate the depth at which the plow shall run, and as the draft-rods D D are applied upon each side of the beam they can be readily attached to and detached from the plow by means of bolt c^3, which is clasped by the front end of plate A^2, this arrangement permitting the yoke to be placed in any desired position upon the beam, while, at the same time, the clevis of the double-tree or a draft-chain can be attached to the horizontal bar C at any point. Whatever may be the adjustment of the draft there will be no undue tension upon any of the parts. So, also, by my construction and combination, in case the beam should become weakened at the center, the rods D D, plates A^1 A^2, brace B′, and handles B B form a rigid combination of devices by which the draft of the team is equalized in its strain upon all the parts.

As the process of forging the land-side, point, and share in one piece is a difficult and expensive one, owing to its irregular shape, I usually first cast them in the proper form from a gray or white iron, then decarbonize or malleableize it, and then convert it into steel, either through and through or to such depth as may be desired, in order to produce a wearing surface which can be hardened and thus rendered very durable, and one which can be polished so as to work easily. So, also, by making the mold-board form or back of cast-iron and then converting into steel I am enabled to give it the necessary rigidity, while at the same time it may be made very light, as the untempered steel is very tough and not liable to be broken by a sudden blow or strain.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The herein-described plow, consisting of the handles B, beam A, braces B′, plates A^1 A^2 bolted to the beam, the draft-yoke C C′ constructed as set forth and adjusted upon the beam by bolt c^2, the draft-rods D D, the bolt c^3 clasped by the plate A^2, the standards E E′, land-side F, and mold-board G, these parts being constructed, combined, and arranged for joint operation, as set forth.

This specification signed and witnessed this 29th day of September, 1871.

ANDREW J. BONANDER.

Witnesses:
G. W. FORD,
JOHN ANDERSON.