W. S. LAWRENCE.

Plow.

No. 196,026. Patented Oct. 9, 1877.

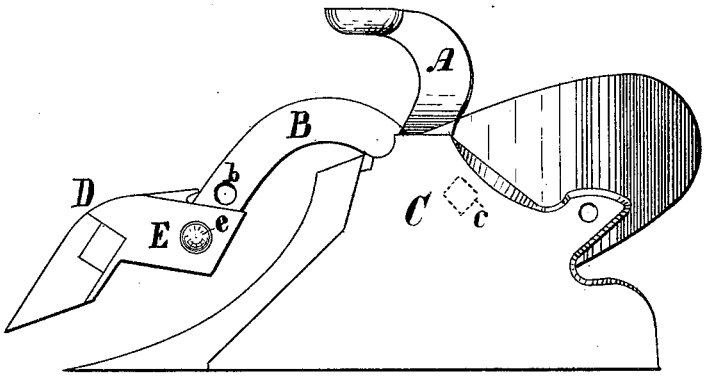

Fig. 1.

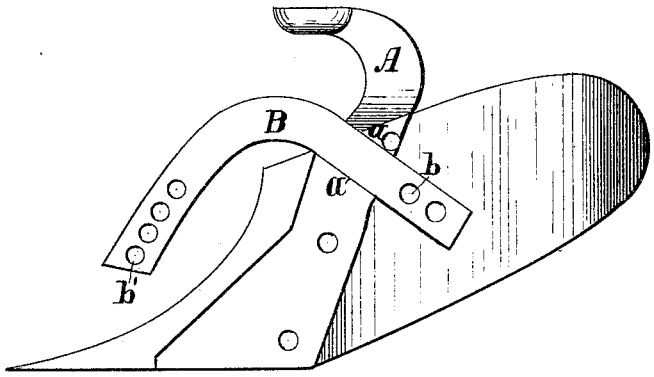

Fig. 2.

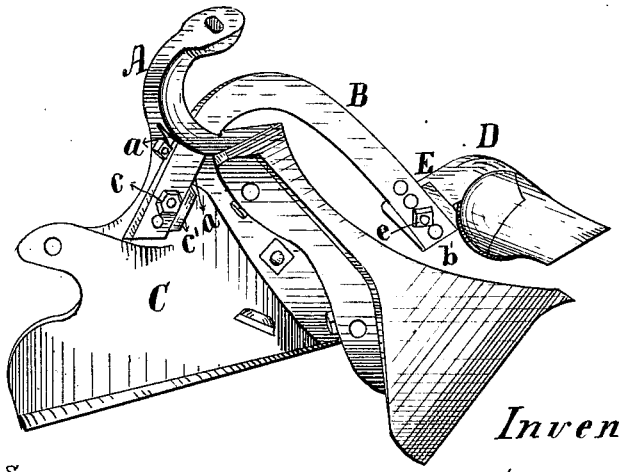

Fig. 3.

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UNITED STATES PATENT OFFICE.

WILLIAM S. LAWRENCE, OF KALAMAZOO, MICHIGAN.

IMPROVEMENT IN PLOWS.

Specification forming part of Letters Patent No. **196,026,** dated October 9, 1877; application filed August 9, 1877.

To all whom it may concern:

Be it known that I, WILLIAM S. LAWRENCE, of Kalamazoo, in the county of Kalamazoo and State of Michigan, have invented a new and useful Improvement in Plows, which is fully described in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 represents a side elevation of a plow embodying my improvement upon the land-side thereof; Fig. 2, a similar view with the land-side removed, and Fig. 3 a perspective view of the same with the mold-board removed.

My invention relates to the method of attaching and supporting the arm which carries the jointer or colter.

The invention consists in attaching the inner end of the jointer or colter arm to the inside of the land-side, which is extended up sufficiently for this purpose.

It also consists in the special combination of the standard, jointer or colter arm, and land-side.

It also consists in various combinations of devices, which will be hereinafter more fully set forth.

In a prior patent granted to me March 6, A. D. 1877, No. 188,019, the bent colter or jointer arm is fitted in an inclined groove in the standard and fastened to said standard. In my present improvement the standard A may be constructed, in a similar manner, with an inclined groove, *a*, in which is fitted a bent arm, B, either angular or circular, which carries the jointer or colter. Instead, however, of fastening the arm B directly to the standard, the land-side C is extended up, as shown in Fig. 1 of the drawings, and the inner end of the arm is fastened directly to the land-side by means of a bolt, *c*, passing through the latter and the rear end of the arm, as shown in Fig. 3 of the drawings. This attachment of the arm to the land-side may be fixed, so that the former is not adjustable back and forth upon its seat in the standard; or it may be a loose fastening, so as to permit the adjustment of the arm mentioned, the rear end thereof being provided with a series of holes, *b*, through any one of which the fastening-bolt may be passed. The land-side C, as shown in Fig. 1 of the drawings, extends up and covers the colter-arm in its seat in the standard, thereby assisting to support the arm and give it rigidity.

The standard A, instead of having a groove for the colter-arm, may be constructed with a slot or opening through it sufficiently large to receive the arm, which is passed down through the slot and fastened to the land-side, as above described. In each case it will be seen that the bent arm is supported on each side, so that it will be very firm and strong. The land-side may be constructed with lugs or flanges *c'* upon the inside to furnish a seat for the inner end of the colter-arm. This construction is not absolutely necessary, however, as the attachment would be sufficiently firm if the surface of the land-side were left smooth. The head of the fastening-bolt *c* should, of course, be countersunk, and finished so as to leave the outside of the land-side perfectly smooth. It is also desirable to retain the inner flange *c'* upon the upper edge of the land-side, for it covers and protects the inner end of the bent arm, leaving no joint for dirt to get into.

When a colter is used, it is made in one piece with the bent arm B. If a jointer is used, it is made separately and attached to the lower front end of the arm. I prefer to make the jointer adjustable upon the arm, and in order to secure this result the jointer D is fastened to a wing or arm, E, which is suitably formed to receive the mold-board and point of the jointer. This wing E extends backward, and is fastened to the front end of the arm B by means of a bolt, *e*, and this end of the arm is provided with a series of holes, *b'*, by means of which the wing E may be adjusted on the arm B to adjust the height of the jointer, as may be desired. If the jointer is not thus made adjustable upon its arm, the wing E and the jointer-arm may be made in one piece.

It will be readily seen that by the use of my invention the colter or jointer will always be held in line with the front or cutting edge of the plow, and will not be affected by changes of the beam upon the standard. At the same time the jointer or colter may be adjusted to run at any height desired without disturbing the alignment thereof with the plow.

When the jointer is used, it may be adjusted by moving the bent arm at the land-side end, or by moving the jointer at the forward end of said arm; or both adjustments may be made at the same time.

It is evident that the attachment may be made so that but one of these adjustments can be effected, and either one may be adopted. The construction and arrangement of the land-side, standard, and jointer-arm are such that there can be very little choking, as the land-side protects the rear extension of the arm, and there is sufficient room between the forward portion of the latter and the bend in the standard to enable it to clear readily.

Having thus described my invention, what I claim, and wish to secure by Letters Patent, is—

1. The jointer or colter arm attached at the rear end to the land-side, along the inside of which it passes, substantially as and for the purpose set forth.

2. The jointer or colter arm B, in combination with the standard A, provided with a seat, in which the said arm rests and is supported, and the land-side C, to which the rear end of the arm is attached, substantially as and for the purpose set forth.

3. The standard A, in combination with the jointer or colter arm B and land-side C, constructed and arranged to cover the joint between the arm and standard, substantially as and for the purpose set forth.

4. The bent arm B, attached at its rear end to the plow so as to be adjustable in a vertical plane, in combination with a jointer attached to the forward end of said arm, and adjustable up and down thereon, substantially as and for the purpose set forth.

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