W. S. LAWRENCE.

PLOW.

No. 191,446. Patented May 29, 1877.

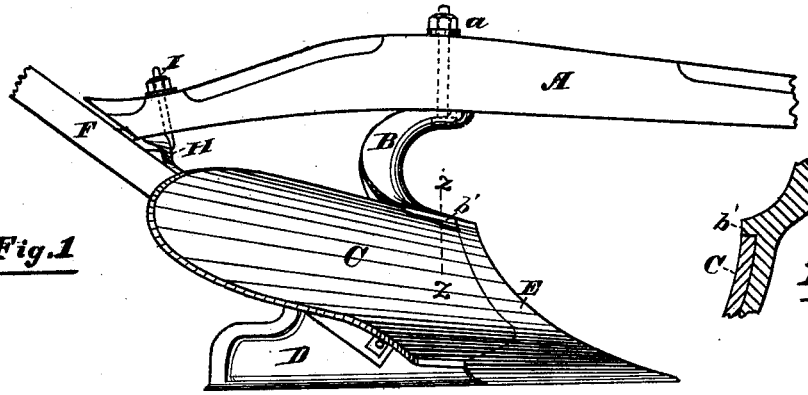

Fig. 1

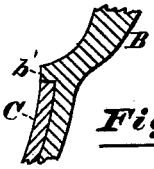

Fig. 5

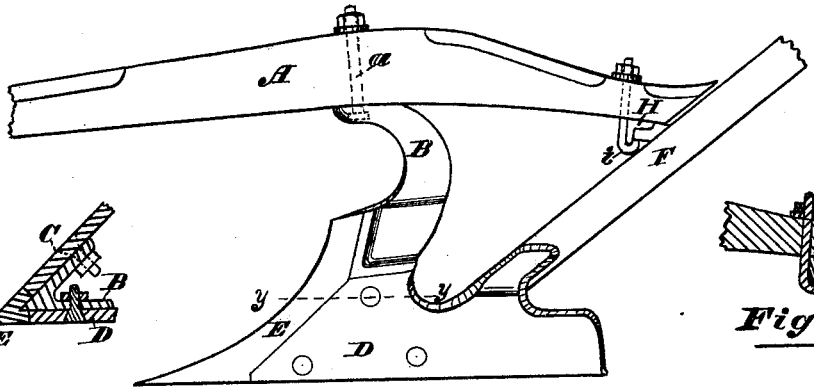

Fig. 2

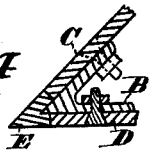

Fig. 4

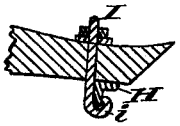

Fig. 7

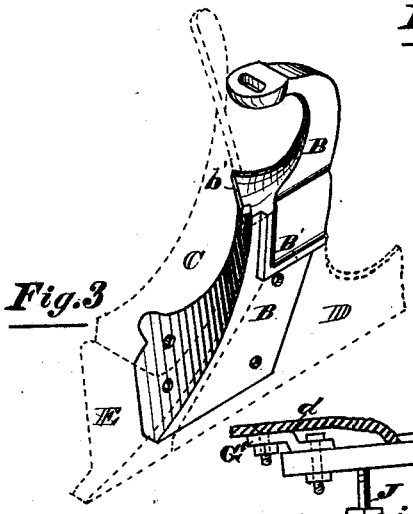

Fig. 3

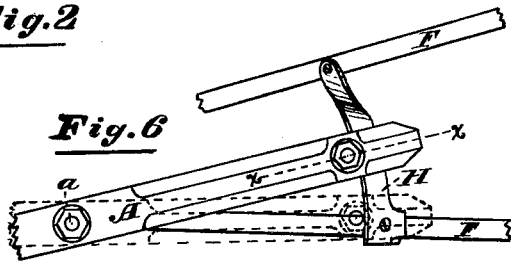

Fig. 6

Fig. 9

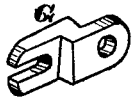

Fig. 10

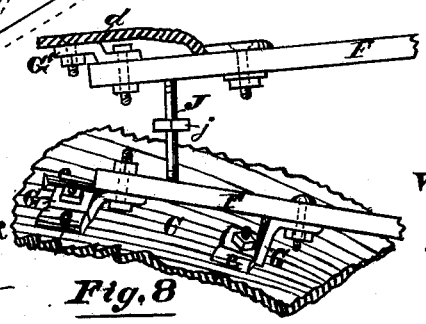

Fig. 8

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UNITED STATES PATENT OFFICE.

WILLIAM S. LAWRENCE, OF KALAMAZOO, MICHIGAN.

IMPROVEMENT IN PLOWS.

Specification forming part of Letters Patent No. **191,446**, dated May 29, 1877; application filed November 18, 1876.

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 the plow on the mold-board side thereof; Fig. 2, a similar view from the land side; Fig. 3, a perspective view of the standard detached, the position of the land-side, mold-board, and colter being shown; Fig. 4, a cross-section taken on the line *y y* of Fig. 2; Fig. 5, a detail sectional view taken on the line *z z* of Fig. 1; Fig. 6, a plan view of the rear end of the beam and the handles; Fig. 7, a detail sectional view taken on line *x x*, Fig. 6; Fig. 8, an inverted plan view, showing a portion of the mold-board and land-side, and the method of attaching the handle thereto; and Figs. 9 and 10, detail views of devices for attaching th handles.

My invention consists in constructing the standard with a shoulder or flange, against which the upper end of the mold-board fits, so that the joint between the back of the mold-board and the standard at its upper edge is covered, while the colter extends above the upper edge of the mold-board, even with the shoulder; also, in the devices for securing the handles to the plow, consisting of lugs of peculiar construction, which are secured to the mold-board and land-side, and to which the handles are fastened; and, also, in various details of construction, all of which will be hereinafter fully set forth.

In the drawings, A represents the beam of the plow, to which the standard B is secured by means of a bolt, *a*, which passes through a slot in the upper end of the standard, and permits the beam to turn thereon, for the purpose of adjustment. The upper end of this standard B is bent backward from the point where the upper end of the colter terminates, as shown in the drawings. The curve of this bend is on the arc of a true circle, and is substantially a semicircle, the diameter of which is on a line, or nearly so, with the bolt *a*, and the upper end of the standard is brought well forward over the upper end of the colter.

The bend in the standard is for the purpose of clearing the plow and avoiding clogging with stalks, weeds, and other like material, between the standard and the beam. I have found, by actual experiment, that the bend of the standard upon the arc of a true circle is the best for this purpose, and that the material which otherwise would clog the plow is more readily and surely run off to one side than in any other form of standard.

On the standard B, and just below the bend in its upper end, is a shoulder or flange, *b′*, which projects directly outward, as shown in Fig. 3 of the drawings. The mold-board C is constructed so that its upper edge is fitted directly against this shoulder, as shown in Fig. 5 of the drawings, which is made flush with the mold-board, the forward end of which is also on a line with the front end of the shoulder, and is fastened to the standard in the usual way.

The land-side D is of ordinary construction, and is attached to the standard B in the usual way. There is, however, a slight offset, B′, in the latter, at the front and lower side of which are shoulders, against which the land-side is fitted, and also the colter E, which is fitted to the front edge of the standard and the front ends of the mold-board and land-side, and projects above the upper edge of the mold-board, so as to be flush with the upper side of the shoulder *b′*, as shown in Figs. 1 and 3 of the drawings. The standard and forward end of the land-side, where the colter joins them, are furnished with straight edges, so that the joints between the colter, land-side, and standard will be on straight lines, as shown in Fig. 2 of the drawings.

The relative position of the land-side, colter, and mold-board, when joined to the standard, is shown in dotted lines in Fig. 3 of the drawings, and the method of fitting them together is illustrated by a cross-section taken on the line *y y* of Fig. 2, and shown in Fig. 4 of the drawings.

It will thus be seen that the upper edge of the mold-board has a firm seat, and that the joint between the mold-board and standard is

fully protected from all dirt and water by the flange or shoulder *b'*. The construction of the land-side and standard so that the joints between them are straight is simpler and cheaper than one made in any other form, and the fitting of the mold-board upon the seats against which it rests is secured with perfect exactness.

The handles F are attached to the mold-board and land-side, respectively, by means of lugs G G'. These lugs are bent, as shown in the drawings, and ribs or flanges *c* and *d* are cast upon the mold-board and land-side, respectively, to form seats or sockets for the lugs, one end of each being slipped between the flanges, and secured by a bolt and nut to the mold-board and land-side. The handles are bolted to the other ends of these lugs, as shown in Fig. 8 of the drawings.

The two lower lugs, to which the ends of the handles are attached, have the ends next to the handles slotted, as shown in Fig. 10 of the drawings, the slots being open at one end, so that the handles may be readily detached therefrom by simply loosening the nuts, without taking them off and withdrawing the bolts. The upper bolts, which pass through the handles, must, however, be removed when it is desired to detach the handles from the plow.

The lugs enable me to use straight handles, and the mold-board and land-side are more easily made than with fixed lugs or loops, as is usual. The plow can also be more readily wooded, and if the handles shrink they can be tightened by turning the nuts on the bolts which fasten them to the lugs, which cannot be done when fixed loops are used.

A bar, H, at the rear end of the plow-beam extends from one handle to the other, and is secured to each. This bar may be of either cast or wrought metal, and is made in the form of what is usually known as "angle-iron," as shown in Fig. 7 of the drawings. The rear end of the plow-beam rests upon the upper side or face of this bar, and is secured thereto by means of a hooked bolt, I, the lower end of which is provided with a hook, *i*, which fits over the lower rib or flange of the bar H, and the shank of which passes up through the plow-beam, being secured by a nut on its upper end. By turning the nut down firmly the hook is drawn tightly over the rib of the change bar or iron H, and the plow-beam will be held securely in position; but it is evident that by simply loosening the nut the hook may be slipped along on the change-iron and the beam adjusted so that the plow will run more or less to land, as may be desired, as shown in dotted lines in Fig. 6 of the drawings.

At the lower ends of the handles F is a rod, J, on one end of which is cut a right-hand screw-thread, and on the other a left-hand screw-thread. The ends of this rod are inserted in holes in the handles, and it is provided with a fixed nut, *j*, near its center, by means of which it is turned back and forth. The lower ends of the handles being firmly secured to the mold-board and land-side, respectively, it is evident that when this double-threaded rod J is turned in proper direction the mold-board and land-side will be spread apart at their rear ends, and turned in the other direction they will be drawn together. The proper adjustment of these parts can be thus effected so that everything will be firm and taut, notwithstanding the fact that, owing to the variation of castings, two plows of the same number will not have the same spread between the mold-board and land-side.

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

1. The standard B, provided with the shoulder *b'*, in combination with the mold-board C and colter E, extending above the upper edge of the mold-board, flush with the top of the shoulder *b'*, substantially as described.

2. The detachable lugs G G', bent as described, and adapted to be inserted between flanges on the mold-board or land-side, for securing the handles to the mold-board and land-side, substantially as and for the purpose set forth.

3. The handles F, in combination with the detachable lugs G G', constructed as described, the land-side D, and mold-board C, substantially as set forth.

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Witnesses:

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C. H. LAWRENCE.