2 Sheets—Sheet 1.

H. WIARD & W. R. BULLOCK.

Hillside Plow.

No. 220,453. **Patented Oct. 7, 1879.**

Fig. 1.

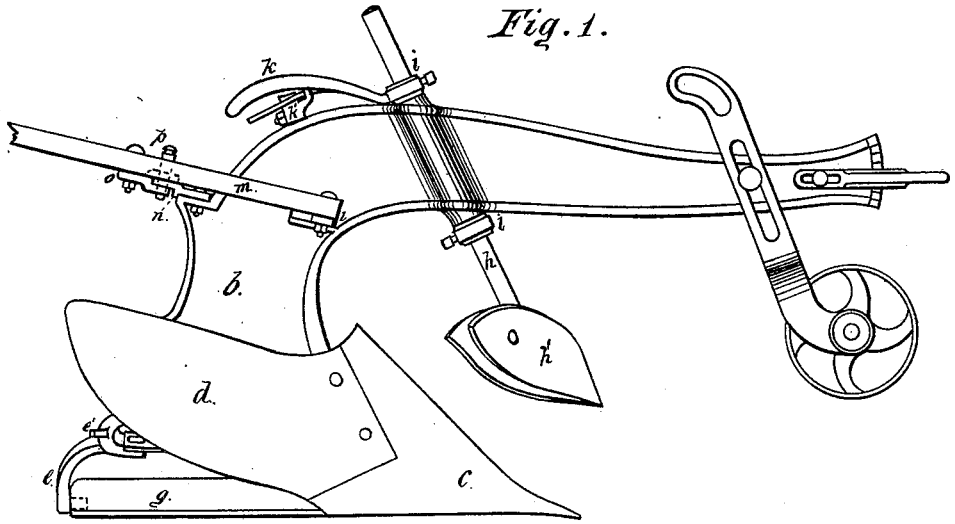

Fig. 2.

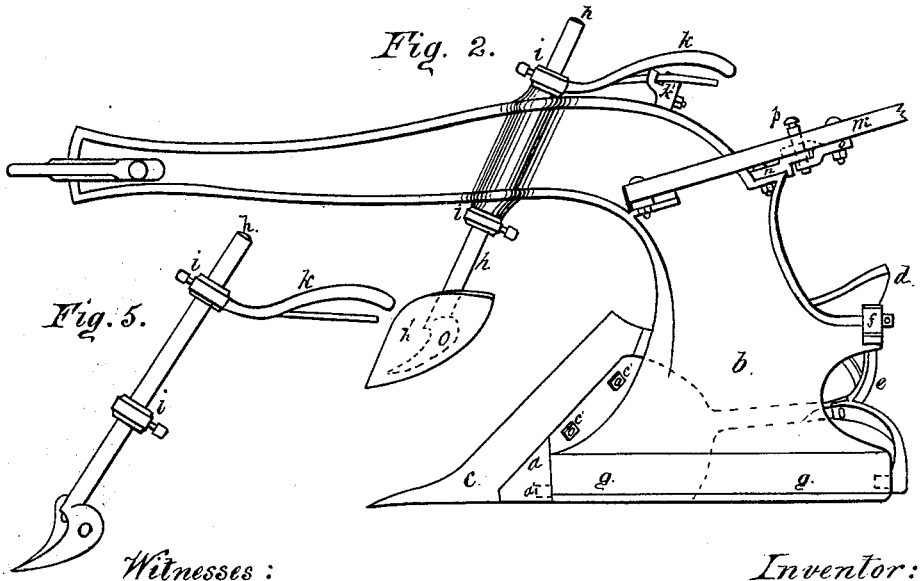

Fig. 5.

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Fig. 3

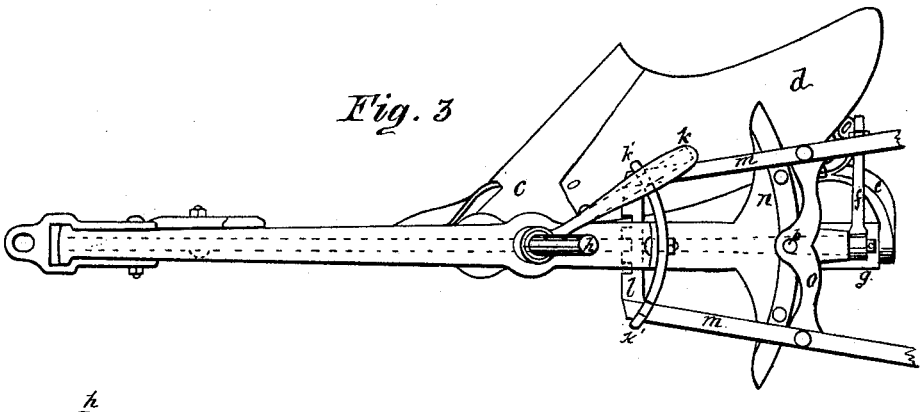


Fig. 4.

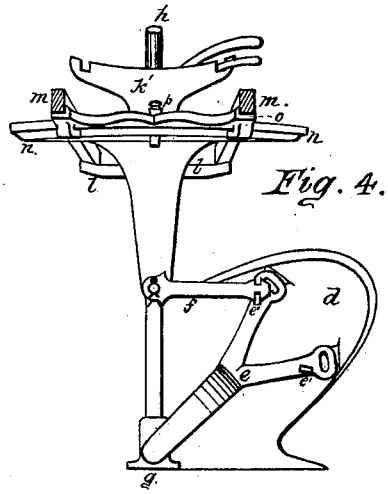


Fig. 6.

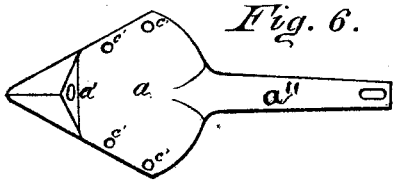
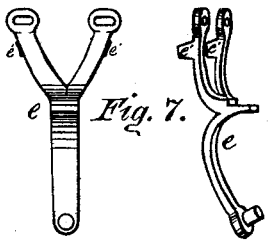


Fig. 7.



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UNITED STATES PATENT OFFICE.

HARRY WIARD AND WILLIAM R. BULLOCK, OF SYRACUSE, NEW YORK.

IMPROVEMENT IN HILL-SIDE PLOWS.

Specification forming part of Letters Patent No. **220,453**, dated October 7, 1879; application filed September 16, 1879.

To all whom it may concern:

Be it known that we, HARRY WIARD and WM. R. BULLOCK, of Syracuse, New York, have invented certain Improvements in Hill-Side Plows, of which the following is a specification.

The purpose of our improvements herein described is the production of a hill-side plow of great strength and durability, combined with simplicity of construction and easy adjustment, into which we can introduce a chilled mold-board and point, and thoroughly brace, strengthen, and support them at the points of greatest strain; also, the manner of reversing the mold-board, and the combining a jointer with a reversible mold-board, so as to be readily reversed as the mold-board is shifted; also, the devices for shifting the handles, all of which are effected without the use of tools or the removal of bolts and screws.

The following description refers to the accompanying drawings, in which Figure 1 is an elevation of the mold-board side of the plow. Fig. 2 is an elevation of the land-side. Fig. 3 is a top plan of the plow. Fig. 4 is a rear view thereof, showing the tripod-braces, &c. Fig. 5 is the jointer-standard with mold-board removed. Fig. 6 is the frog *a*, shown detached. Fig. 7 is the tripod-brace.

The same letters indicate like parts in all the figures.

In manufacturing this plow we propose to use chilled-iron mold-boards and points, as being preferable to any others for durability, economy, and free and perfect working, although our improvements can be employed to advantage on plows constructed with other mold-boards, as a foundation upon which they can be fastened and securely braced and supported, together with the point.

We form what we call a "frog." (Shown separately at Fig. 6.) The front end of this frog is of a spade-formed outline, having a socket near its front end at *a'*, that fits onto the front end of the standard or lower end of the plow-beam, that is cast in one piece with it, and is expanded backward, so as to form the land-side *b*. The lower front end of this piece is rounded to fit into the socket *a'*, and on it the frog swivels to reverse the mold-board.

To the broad part of the frog the point *c* is fitted, and securely bolted by two bolts at *c'*. Its front end projects sufficiently beyond the frog to form a proper-shaped point for the plow, as seen in the elevations and plan.

Just in rear of point *c* the mold-board *d* is bolted to the frog. the front edge of it closely fitting up to the point, so as to form a perfect joint with a smooth surface at their junction.

The outline of the point and mold-board and their curvature are the same on both wings, so as to fit properly and equally well on either side of the standard.

The broad end of the frog, to which the point and mold-board are bolted, forms a strong and permanent base of support for them just where the greatest strain usually comes. From this broad front of the frog the arm *a''* projects backward nearly in a straight line, serving as a brace to steady and strengthen it, with an oblong hole through its rear end, to which is bolted a tripod-brace, *e*, two arms of which extend up to the rear end of the mold-board, to support it at that point by being bolted to lugs thereon. The holes through which those bolts pass are oblong, to compensate for any warping or shrinkage of the mold-board or arms. The hole through which the bolt passes to secure the brace to the rear arm of the frog is also made oblong, at right angles to that in the end of the frog-arm above named.

The lower arm of the tripod *e* has a pin or pivot projecting from it forward, that enters a socket in the heel of the land-side, and forms, with the point on the front end of the land-side, a pivot, on which the mold-board turns from right to left and back.

On each of the arms of the tripod *e*, bolted to the mold-board, there is a boss, *e' e'*, cast, onto which a latch or brace bar, *f*, catches to hold the mold-board and land-side securely in proper relative position, and it assists in bracing the same when required. This latch-brace *f* is pivoted to the upper rear corner of the land-side, and acts as a catch and brace.

There is a removable shoe, *g*, on the sole of the land-side that acts as a wear-plate, and is readily removed and replaced.

By the above-described method of attaching the mold-board and point they can be made

of chilled iron without danger of breakage, they being so securely braced and supported as to resist the shocks and strains to which they must be subjected.

There has never, so far as we are advised, been a jointer applied to a hill-side plow. We effect this by placing the standard in the center of the beam, running the standard through a vertical hole formed therein. We make this hole round and the standard *h* cylindrical, with a stout sickle or crescent shaped base at the bottom, as clearly shown in Fig. 5, onto which a bifurcated chilled mold-board, *h'*, can be fitted and bolted. This mold-board is so shaped as to present a land-side in proper line on one side and a mold-board on the other when turned in one direction, and the reverse when turned the other way.

The cylindrical standard *h* has collars *i* upon it, with set-screws to affix them to it above and below the beam, by which the height of the jointer is determined.

From the upper collar *i* a handle, *k*, projects backward, that the standard is turned and held by, so as to place the jointer properly in line for work.

On the rear curve of the beam there is a horizontal segment-piece, *k'*, bolted, over which the handle *k* sweeps, having on its under side a spring-catch, that falls into notches on each end of segment *k'*. By this the handle is stopped, and holds the jointer in its proper position on either side, as the mold-board of the plow is turned to the right or left.

The handles *m* are properly adjusted and set by the following devices: The lower ends are bolted to the ends of a segment-piece, *l*, notched on its convex forward edge. This piece *l* passes through an oblong slot in the plow-beam, the front end of which is formed for the notches in *l* to fit onto when the segment-piece is thrust forward. The slot is sufficiently broad for the segment to recede, so as to clear its notches and allow it to slide endwise to throw the lower ends of the handles over to either side to set them. A plate, *n*, is affixed to the beam at its rear downward curvature, having a series of holes through it near its rear edge, as seen in Fig. 3. On this plate *n* a piece, *o*, fits and slides, projecting forward at its center over plate *n*, with a hole in the overlap corresponding with the holes in *n* when slid over them.

The two plates are held by a pin, *p*, passing through the holes, which pin *p* may be chained to the handles to prevent its loss. The handles are bolted securely to plate *o*, with which they have a side movement, and are held in position by the pin *p*. By this device the handles can be adjusted readily and securely, as the mold-board is turned from right to left, and vice versa.

Having thus fully described our improved construction of hill-side plows, we claim—

1. The frog *a*, containing the socket-block *a'* and arm *a''*, constructed substantially as herein described, and for the purposes specified.

2. The combination of the frog *a* and tripod-brace *e*, united by the rigid arm *a''*, with the land-side and mold-board, as and for the purposes specified.

3. The reversible double mold-board jointer, in combination with the reversible mold-board plow, constructed and arranged substantially as and for the purposes specified.

4. The combination of the notched segmental plate *l* with the beam and lower ends of the handles, by which they are adjusted, substantially as and for the purposes specified.

5. The combination of the plates *n* and *o* with the notched plate *l* and handles *m*, as and for the purposes specified.

In witness whereof we have hereto set our hands.

HARRY WIARD.
WM. R. BULLOCK.

Witnesses:
J. J. GREENOUGH,
T. E. HANCOCK.