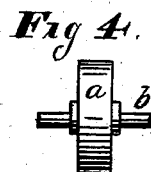
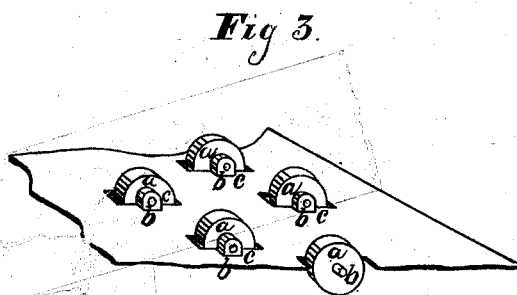
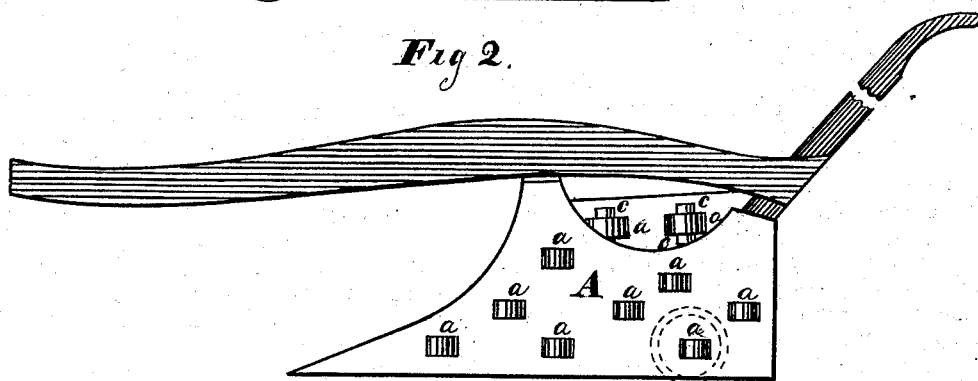
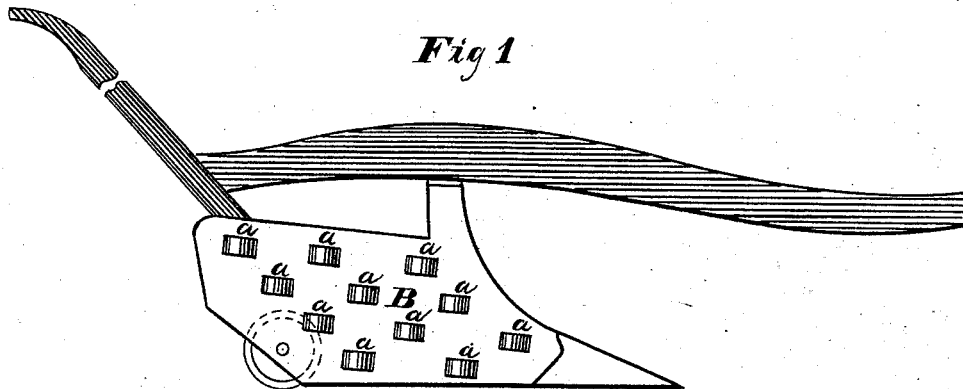


W. H. HARRINGTON & A. B. MERRILL.
Plow.

No. 216,271.

Patented June 10, 1879.



WITNESSES

Edw. Dummer

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INVENTORS

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UNITED STATES PATENT OFFICE.

WILLIAM H. HARRINGTON AND ALONZO B. MERRILL, OF CAMBRIDGE,
MASSACHUSETTS.

IMPROVEMENT IN PLOWS.

Specification forming part of Letters Patent No. **216,271**, dated June 10, 1879; application filed
June 13, 1878.

To all whom it may concern:

Be it known that we, WILLIAM H. HARRINGTON and ALONZO B. MERRILL, both of Cambridge, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Plows, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings.

Our invention relates to a plow having rollers set in the mold-board or land-side to reduce the friction of the earth thereon; and it consists in a plow having two or more rows of openings in the mold-board or land-side, through which project for a suitable distance narrow rollers, each one of which is on a shaft by itself, and which are so set that those of one row shall alternate with those of an adjacent row, the openings being such that each roller shall be surrounded at sides and face by a portion of the fixed surface of the mold-board or land-side.

In the drawings, Figure 1 is a view of a plow embodying our invention, showing the mold-board. Fig. 2 is a view of the plow, showing the land-side. Fig. 3 shows the inner side of a portion of the plow. Fig. 4 shows one of the rollers and shaft enlarged.

Our plow is designed to have a land-side, A, and a mold-board, B, of the best possible form. In such a plow there is considerable curvature of the mold-board in planes supposed to cut the same at right angles to the travel of the furrow. Now it is important that the axes of the rollers *a* should be in said planes, in order that the furrow should act most directly to revolve the rollers; and it is desirable that the rollers should be quite narrow, that as much rolling-surface may be introduced in said curvature as possible, conforming as nearly as may be to it. It is necessary, also, that each roller, when introduced in the curved mold-board, should be on a shaft by itself to be placed in the best possible relation to the curvature, since to accomplish this no two rollers can have their axes in the same straight line.

We place the rollers in either the mold-board or land-side, so that those of one row shall alternate with those of an adjacent row—

that is, so that a roller is opposite the space between two rollers of an adjacent row, the rows being in, or approaching the direction of, a horizontal line. By this means there will be room for the shaft and bearings of each roller, to allow the largest portion possible of the surface of the land-side or mold-board to be a rolling surface. This will reduce the friction caused by the earth on the plow to the least possible degree.

Each roller *a* should also be surrounded at the face, as well as at the sides, by a portion of the fixed surface of mold-board or land-side, to keep the earth from clogging about the rollers.

The rollers *a* have shafts *b*, which are held in bearings in stands *c*, joined to the inner side of the land-side and mold-board. The openings for the rollers in the land-side and mold-board are of the proper size to allow the free working of the rollers, which project sufficiently to relieve the fixed surface of land-side and mold-board most effectually of the pressure of the earth.

Rollers have been previously set in the mold-board and land-side. Also, a mold-board has been formed by a kind of frame-work, having rollers set between the rails thereof, the rollers alternating in adjacent rows, but not so as to be surrounded at the face of each roller, as well as at the sides, by a fixed portion of the mold-board. Therefore we do not claim, broadly, the use of rollers, nor alternating them in adjacent rows; but

We do claim—

A plow having two or more rows of openings in the mold-board or land-side, through which project rollers, each one of which is on a shaft by itself, and which are so set that those of one row shall alternate with those of an adjacent row, the openings being such that each roller shall be surrounded at sides and face by a portion of the fixed surface of mold-board or land-side, substantially as hereinbefore described.

WILLIAM H. HARRINGTON.
ALONZO B. MERRILL.

Witnesses:

EDW. DUMMER,
FREDERIC H. LANE.