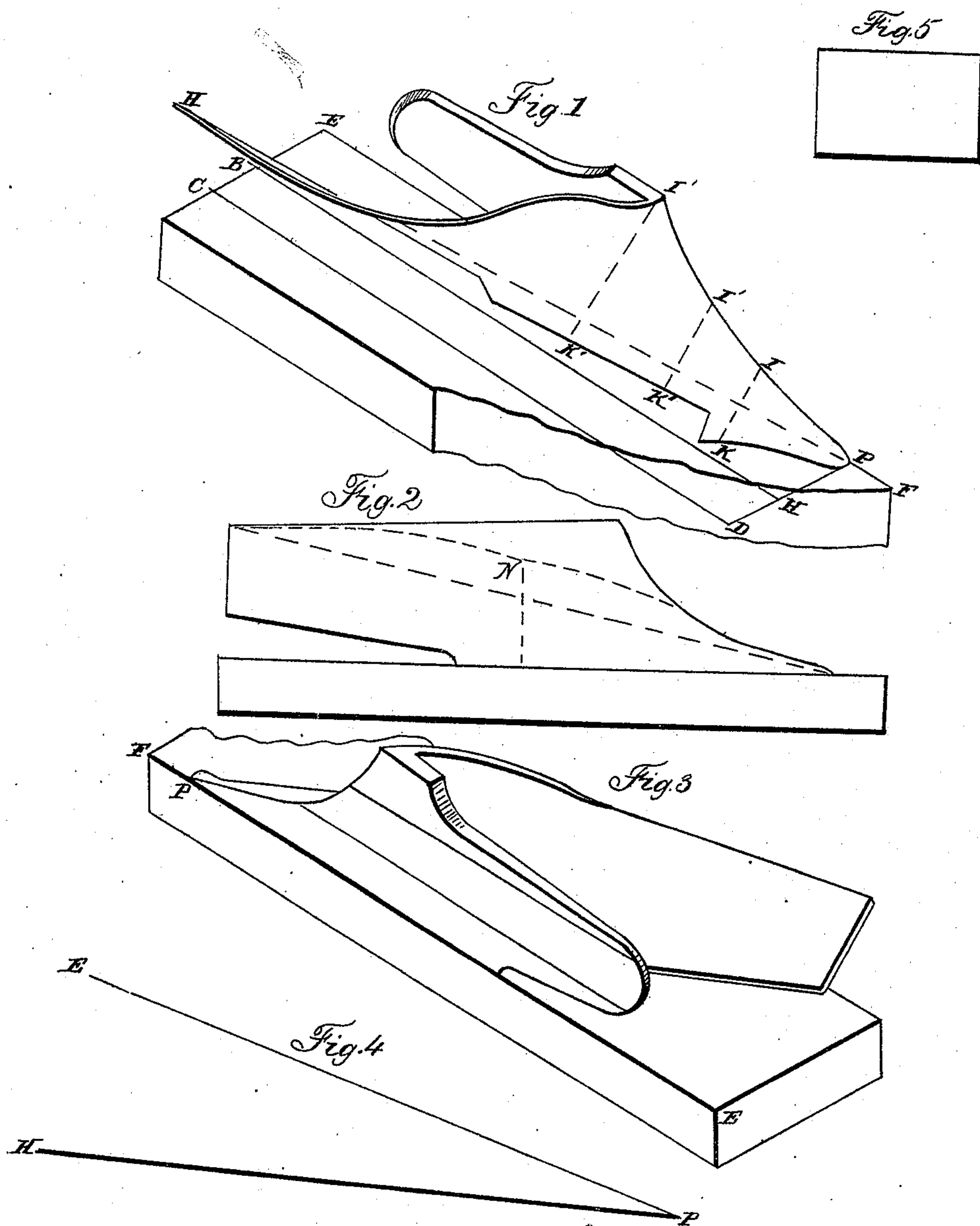


G. H. MOORE.  
Plow Moldboard.

No. { 24, {  
31,028. }

Patented Jan. 1, 1861.



Witnesses:  
John Thompson Jr.  
Saml J. Partridge

Inventor:  
Gilbert H. Moore



# UNITED STATES PATENT OFFICE.

GILBERT H. MOORE, OF ROCHESTER, NEW YORK.

## IMPROVEMENT IN PLOWS.

Specification forming part of Letters Patent No. **31,028**, dated January 1, 1861.

*To all whom it may concern:*

Be it known that I, GILBERT H. MOORE, of the city of Rochester, county of Monroe, State of New York, have invented a new and useful Plow; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, the same letters in this specification referring to the like parts.

For the accompanying drawings, Figure 1 represents the right lateral view, or the mold-board of the plow; H P, the transit-line; I K nearest P, the share; I' K' I' K', lines at right angles with the landside and with the furrow-slice.

Fig. 2, N, the termination of the first spiral curve and commencement of the second spiral curve.

Fig. 3, the left lateral view, landside; P, junction of landside and share and commencement of transit-lines.

It is a well-known fact that in proportion to the advance of mechanical tools and implements toward perfection, or toward that construction which is the best suited to the discharge of their functions, the more important are slight variations. To plows had been devoted the highest mechanical skill for a long period of time, and they are in that condition when slight changes are great improvements. To improvements of this character mechanical skill should now apply itself, as such changes are demanded by the agricultural community, and the test of the value of which is demonstrated by the action of plows thus improved. Thus the improvement invented by me, when measured in its curves by the length of their radii or the extent of their axes, or when compared with plows of the same character, may appear slight, yet it will be found in practical operation to be exactly the change which was required to obtain further excellence. Those accustomed to examine implements with a nice and clear discrimination of the variation in curves and the position of these curves will readily perceive my improvement and clearly distinguish its characteristic change from the features of plows of this general character, while this theoretic decision will be abundantly demonstrated by the action of the plow in the hand of the practical agriculturist.

To proceed to the special description of this important improvement, the mold-board is formed by the combination of two spiral curves which continually recede from a center, while they continue to revolve about it. The first spiral commences at the junction of the share with the landside P, Fig. 1, and terminates at about midway of the mold-board N, Fig. 2, and at the exact point of the mold-board when the furrow-slice reaches the perpendicular, having been elevated from the horizontal. This is an important feature in the construction of my improvement. The plow up to this point is a wedge. All other plows, while they deviate from, profess to conform to this important mechanical principle. At the point last named, N, Fig. 2, the second spiral curve commences and is in its results and action just the reverse of the one first named and described. To describe this feature in other words the first spiral curve raises the furrow-slice from the horizontal to the perpendicular. It elevates the furrow-slice on its external and inferior angles, so that it makes this angle a hinge or turning point. The action of the second spiral curve thence commences its action or performance of its function. It presses the furrow-slice upon what had been its external and superior angle, and carries it over to an angle of forty-five degrees. From the back of the wing of the share both the share and the mold-board are eased away on the lower side, so that the furrow-slice has a bearing upon the mold-board throughout its whole extent of only about three inches in width, all at the same time, and all equal at the same time, (thus reducing the friction to the lowest practical degree,) until the furrow-slice arrives at the heel or terminus of the mold-board, when the pressure is divided over the whole breadth.

My improved plow differs from the plow patented by Jacob Bingham in the Canadian Patent Office in the year 1855 in the following important particular. The working-surface of the mold-board in the Bingham plow is divided into three grand sections of equal length from point to heel, each section causing the furrow-slice to turn forty-five degrees. These sections are again subdivided into five divisions each, upon which a transit-line is traced, this line corresponding with the upper margin of the furrow-slice during its passage over the share and mold-board. The shape of this line



viewed laterally would be that of two arcs intersecting each other at the rear end of the second section, caused by the furrow-slice changing its hinge-corner to that of another at this point. The mold-board is then eased off from the transit-line downward through these subdivisions, so as to cause the least possible friction against the furrow-slice, attainable in this form of plow in a manner very distinctly different, and the distinction is highly important, and to which I beg to call especial attention. In my improved plow I divide the mold-board into two grand divisions by a direct line from point to heel, commencing at the junction of the share with the landside, and terminating at the heel of the mold-board, (the line running upward and outward,) and the share and mold-board eased off above and below this line, so that the furrow-slice will have a continual bearing upon it during its passage over it, thus causing this plow to act like a wedge.

In a work entitled "Farm Implements," by John J. Thomas, at page 130, *et sequitor*, is a description and drawing of a plow, which is here referred to as an illustration of the characteristic principle of my improvement, and because to those incapable of appreciating those finer differences which show the skill of the inventor, and on which the perfect action of such implements depends, might be overlooked and unappreciated. The line from point to heel in the plow above referred to is not drawn as in mine for the purpose of dividing the mold-board into two grand sections and at right angles with the furrow-slice, but for convenience of reference in illustration, and upon the vicious principle of bringing the pressure of the wedge at right angles with the straight line, and not at right angles with the furrow-slice, as in my invention. As to the general principle of the plow embodying my improvement, a rapid inspection of a drawing of the two may confound their distinctive characteristics, while to the discriminating eye of an expert in this implement the difference is fully and palpably presented.

I am aware of a general resemblance of the contour or shape of a plow called "Ransom's plow," as figured on a sale-card of agricultural implements. This resemblance of contour, however, appears only by a rapid glance, and the analogy disappears altogether when the character of the curves and other lines of this plow are submitted to the analysis and critical examination of an expert.

I am also aware of the claim of Moore and Mason in a withdrawn application for a patent for a plow in 1838; but it will be observed that they claim as an improvement the turn of the mold-board which is more full and convex toward the fore part, while mine is concave in one direction and plane in the other.

The difference between the plow described by Thomas and my improved plow has been admitted by the Patent Office in the decision of the Commissioner adverse to the granting of Letters Patent on my former application, in which

my improvement was not so fully and clearly set forth as is now presented. Moore adopts Thomas' suggestion, and gives a slight modification to the form of the wedge. This "slight modification," in the words of the office, is one of the constituent features for which patents are granted. The issue of patents is not based on the extent of the change which embody the inventive idea, but it is utilizing an idea by the production of a plow which in its operations shows its value.

In the decision referred to it is stated that the applicant was remiss in pointing out no advantage of the wedge. It is not necessary that an applicant should prove the exact extent or degree of utility of his improvement. The question before the office is, "has a change or a new modification of a plow been presented?" The word "useful" as interpreted by the courts is: "What is not frivolous. What is not noxious to the public." Were it demanded of every applicant that the exact degree of utility should bear on the granting of a patent, the duty of an examination as provided by law would be avoided, and the practice of the Office would become a mere filing of affidavits, because the extent of the utility could only be proved by long use in the hands of many practical agriculturists. It is admitted that a straight edge, which is flat on the face of the mold-board, will be at right angles to the line of motion; and it is also admitted that the action of the wedge and screw have been combined. Nevertheless there is no plow to be found combining the wedge with two spiral curves, which are placed so that their combined action is such as in the improved plow which I now present for the protection afforded by the Government by the issue of a patent under the provisions of the law in the case made and provided.

I also am aware that mathematical formula, or precise mechanical theories of the construction of the mold-board or other parts of the plow are not in themselves the subject of a patent. Descriptions of this character are introduced into this specification by the requirement of the law, so that those skilled in the art may more readily perceive the construction of the plow which embodies my improvement.

My method of constructing a pattern for the share and mold-board of my plow is as follows: Upon the plane, Fig. 1, consisting of a heavy plank some six feet long and two feet or so wide, I construct a solid mass of wood, consisting of two-inch planks of the proper length and width, glued one upon another until I get the requisite height for a mold-board, and in such a position as to nearly form the share and mold-board. From this structure I form my pattern in the following manner: Upon the plane above mentioned I draw a line, B H, parallel with the landside of the plow. The distance between this line and the landside to correspond with the desired breadth of furrow. Parallel to this line and still farther from the landside I draw another line, C D,



the distance between the two lines representing the desired depth of the furrow. I then form a block of wood, (seen at Fig. 5,) representing a transverse section of the furrow-slice, of such breadth and depth as already laid out upon the plane. I then cut away the extreme terminus of the mold-board until this block will rest on one of its corners in the outer or last line drawn on the plane and lie in such a position as to represent a furrow-slice properly deposited, with the original lower surface of said block or furrow-slice pressing upon the mold-board at its last point of contact. This gives me the exact shape and position of the acting surface of the mold-board at its heel or terminus. I then work a direct line, P H, upon this mass of wood from the extreme point of the share, with the landside to this heel or terminus. Then taking the block of wood Z, Fig. 5, representing the furrow-slice, and placing it on the plane in front of the share, with one corner against the point of the share at the landside and the other touching the first line drawn on said plane, I cut away all obstacles until this furrow-slice has a bearing all

the way upon this direct line P H from point to heel, the corner of the furrow-slice acting as a hinge on the first line upon the plane until it (the furrow-slice) arrived at a perpendicular, when the hinge changes from the first or inner to the outer line. From the back of the wing of the share both the share and mold-board are eased away on the lower side of line P H, so that the slice has a bearing upon the board of only about three inches, (thus reducing the friction,) until it arrives at the heel or terminus, when the board has a pressure upon it throughout its whole breadth. The inner side of the pattern is then cut away to the desired distance for a casting.

What I claim as my invention, and desire to secure by Letters Patent, is—

A plow constructed and composed of the several characteristic features herein described.

Rochester, April 10, 1860.

GILBERT H. MOORE. [L. S.]

Witnesses:

JOHN THOMPSON, Jr.,

SAML. S. PARTERIDGE.