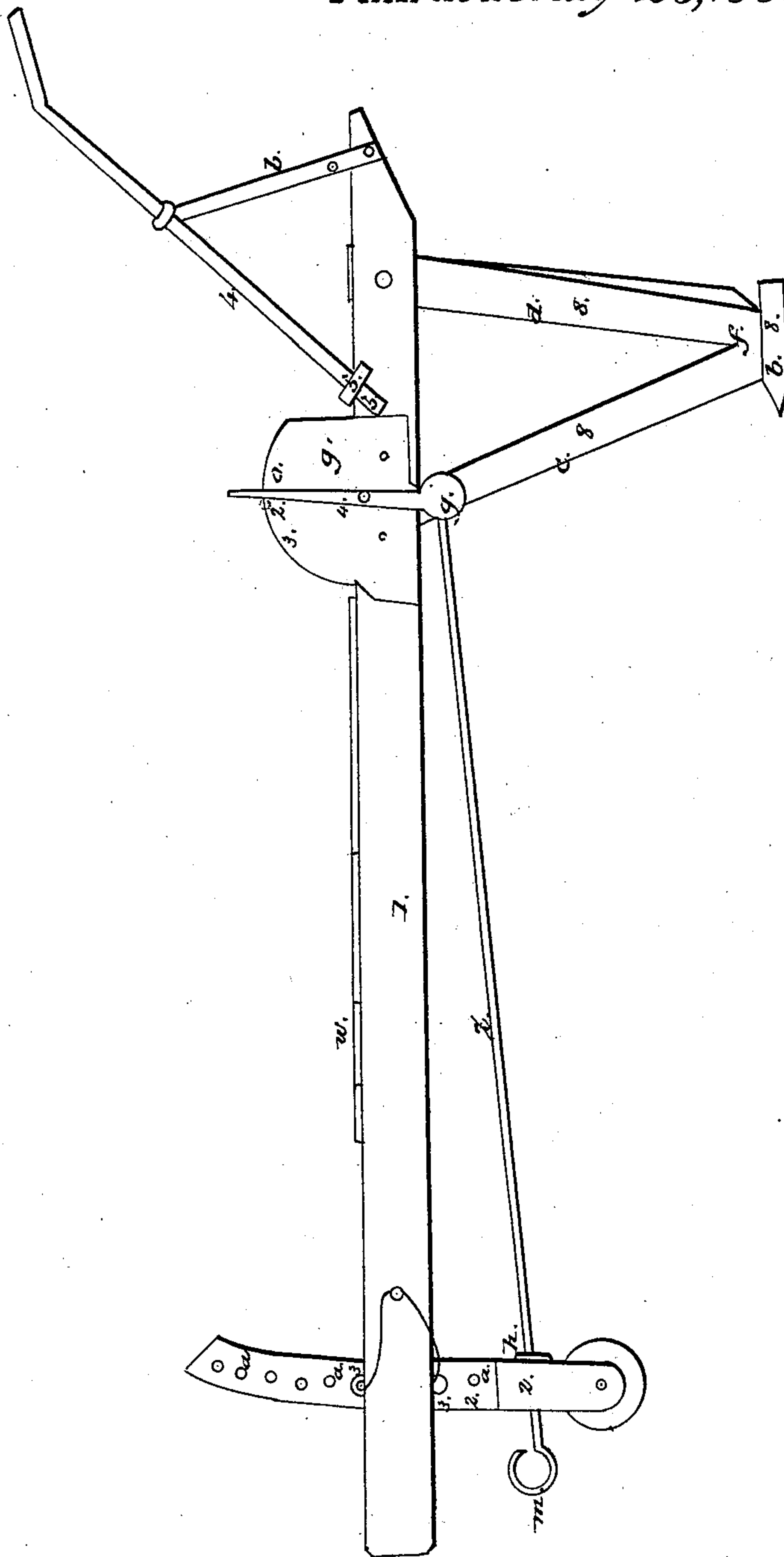


C. G. Grabo.

Mole Plow.

N^o 38,677.

Patented May 26, 1863.



WITNESSES;

Ernst Schöber

F. Rohnerk sen

INVENTOR:

Christian G. Grabo

UNITED STATES PATENT OFFICE.

C. G. GRABO, OF GREENFIELD, MICHIGAN.

IMPROVEMENT IN DRAIN-PLOWS.

Specification forming part of Letters Patent No. 38,677, dated May 26, 1863.

To all whom it may concern:

Be it known that I, C. G. GRABO, of the township of Greenfield, in the county of Wayne and State of Michigan, have invented a new Drain-Plow; and I do hereby declare that the following is a full and exact description of said invention.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

1 represents the beam of my drain-plow.

2 represents an iron regulator or standard, which passes through a slot near the front end of the plow-beam, and which is perforated by a number of holes, *a*, to adjust the position of said regulator to the beam by means of the iron pins or keys 3, for the purpose of causing the plow to run in the desired grade.

8 represents the colter, to which the mole *b* is secured. This colter is firmly secured at its upper ends to the plow-beam, and as it cuts through the ground it is desirable that it should be so constructed as to offer the greatest possible strength and find the least possible resistance in the ground. These two objects I attain by making the colter 8 V-shaped, as represented in the drawings, the two upper ends being secured to the plow-beam, and the mole being secured to the lower end, where the two shanks meet, thereby enabling me to secure said colter effectually to the beam, and this shape offering great resistance against any pressure which is brought against it in front, while its two front edges, *c* and *d*, presenting inclined lines, operate in a draw-cut in the ground, which it is well known can be made with less power and which works more effectually than the cut of the knife, the edge of which is perpendicular to the line of motion. The angle which the two shanks of the V-shaped colter form with each other is such that when a perpendicular line is drawn from the apex *f* to the plow-beam the two shanks of the colter shall respectively be on the two sides of said perpendicular, thus causing the two edges to cut in two different directions—that is, the edge *c* cuts downward and the edge *d* upward—thus equalizing the strain which is brought on the colter to a great extent.

7 represents the rod to which the tug-chain is hitched. Its rear end is secured at *g* to the front colter, 8, and thereby the strain of the draft is directly on the colter and not on the

beam 1, thus preventing the colters 8 from working loose in their fastenings in the beam. The front end of the rod 7 passes through an oblong hole in regulator 2, bearing with the shoulder *h* against it to keep it in its proper position, and the front end of the rod terminates in the hook *m*, to which the tug-chain is secured. Thus it will be seen that the entire strain by which the plow is operated acts directly on the colter 8 to which the mole is attached. The grade of the drain-plow is adjusted by means of the application of a graduated circle, 9, to the center of which a pointer, 4, is pivoted whose lower end is weighted so as to keep it in a perpendicular position; and the grade of the plow can be adjusted by means of the regulator 2 by observing the pointer 4 indicating the angle of elevation or inclination by reference to the points 0 1 2 3 marked on the dial.

The plow-handles 4' are secured to the beam 1 by means of an iron clevis, 5, which is secured to the top of the plow-beam, and they are supported by means of the braces 6, which are secured to the rear end of the plow.

In operating the plow the mole *b* and colter 8 are sunk in the field to the required depth. The grade of the plow is then adjusted, and the plow is forced through the ground by any power attached to the front end, *m*, of the rod 7, and the mole *b* is forced through the earth, forming a solid walled drain therein, while the colter 8 cuts through the ground to hold and guide the mole.

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

1. The application to mole-plows of a V-shaped colter, when the two shanks of said colter form such an angle with each other as to stand respectively to both sides of the perpendicular line drawn from the apex of the triangle to the plow-beam, substantially in the manner and for the purposes herein described.

2. In combination with a V-shaped colter, as herein described, the draft-rod 7 and regulator 2, substantially in the manner and for the purposes herein set forth.

CHRISTIAN G. GRABO.

Witnesses:

EMIL SÖHEBER,
T. ROHNERT, Sr.