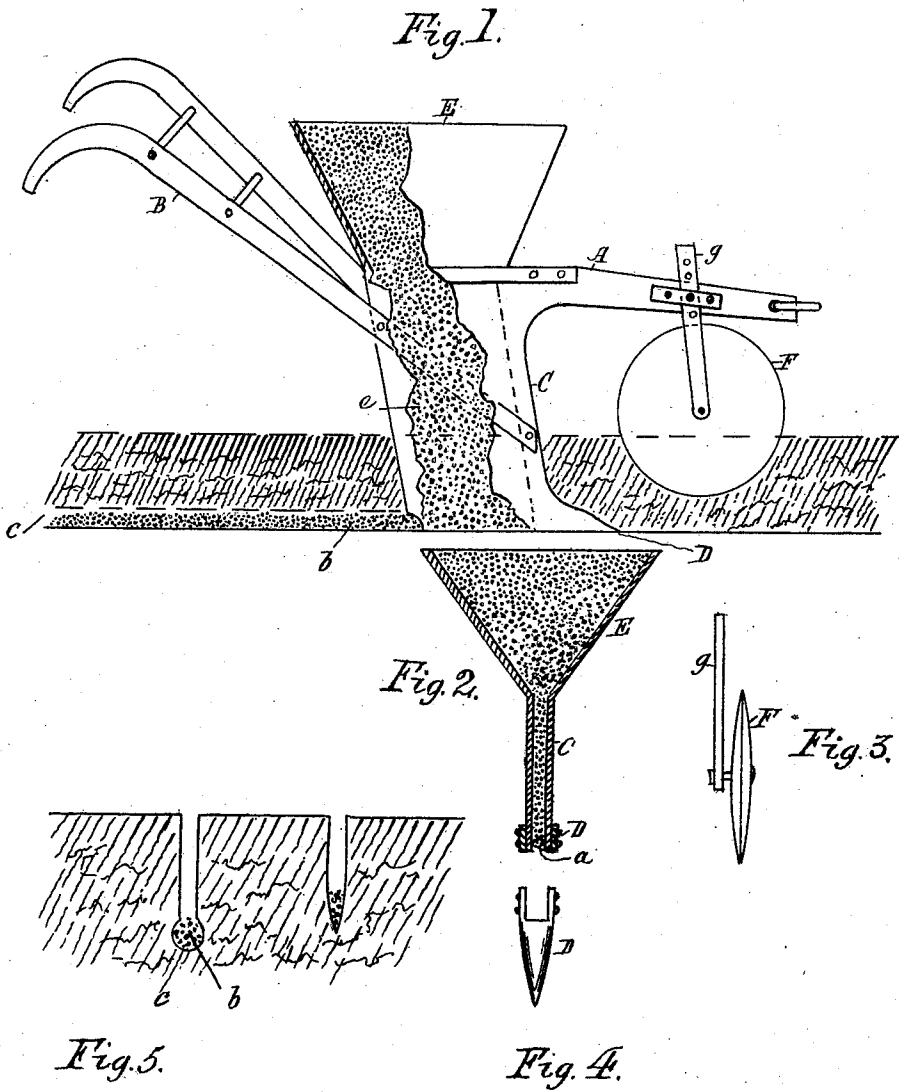


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SYSTEM FOR LAND DRAINING.
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978,836.

Patented Dec. 20, 1910.



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SYSTEM FOR LAND-DRAINING.

978,836.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, EDWARD WATSON BOWSLAUGH, a citizen of the Dominion of Canada, and resident of the township of North Grimsby, in the county of Lincoln, in the Province of Ontario, Canada, have invented a certain new and useful Improved System for Land-Draining; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same.

The object of the invention is first, to provide a new system of land draining which consists in means to press the soil apart by means of a specially constructed implement and when the subsoil is tough and will not yield readily a double convex wheel attachment is added to the machine which is sharp enough on the edge to cut into the soil and press it apart and form a longitudinal space into which is deposited a layer of sand, gravel, small stones, or equivalent substance from a hopper and chute carried on the machine. This forms a drain through which the water will percolate or drain away, obviating the necessity of digging a trench, which is expensive, the labor being great and laborious. By my system a strong team of horses can draw the machine through the soil and deposit the sand, gravel, etc., in the track formed and do it as fast as the team will walk, the soil is not turned up but pressed apart, by the machine which will be more fully described in detail hereinafter, and shown in the accompanying drawings in which,—

Figure 1, is a side view of a machine embodying my invention which will be modified according to circumstances. Fig. 2, is a vertical section of hopper and chute. Fig. 3, is an edge view of the double convex wheel with sharp edge. Fig. 4, is a top view of the shoe detached. Fig. 5, shows a section of earth and two styles of drains the machine will make.

Similar letters refer to similar parts throughout the several views.

In the drawing, A, represents a strong beam which may be of any size and form different from that shown, the form not being essential, provided it be of the requisite strength and is provided with two handles, B, for holding steadying and guiding the machine.

C, is a colter shaped chute secured firmly

to the beam in any desired manner to produce strength.

D, is a sharp pointed shoe firmly attached to the bottom of the hollow colter shaped chute, C, the latter being formed sharp on its front edge so as to press its way gradually through the soil.

E, is a hopper of any form and size secured on the top of the rear portion of the beam, A, having an opening in the bottom, communicating with the hollow colter, C, which establishes an open communication, *e*, between the hopper, E, and an opening, *a*, in the rear part of the shoe, D, by means of which any substance placed in the hopper, E, will find its way by gravity down to the shoe and drop out behind it as shown at Fig. 1.

b represents the sand or gravel, etc., dropped into the drain channel *c*, in the earth formed by the shoe, D, of the machine.

When the soil to be drained is a very stiff clay, a wheel F, is employed which is formed convex on both sides, and sharp on the outer periphery so as to cut readily into the soil and press it apart to form a channel, *f*, for the sand or gravel as shown at Fig. 5, in some circumstances the wheel can be employed alone with the shoe removed or in other circumstances both wheel and shoe can be used simultaneously.

When the wheel is employed it may be pivotally secured to a bar, *g*, attached adjustably to the beam, A, in any convenient manner.

In most cases it is not proposed to sink the drains to a great depth, but only a few inches below the ordinary plowing, say ten or fifteen inches, and placing the drains close together so that the number of them will carry off the water. It is not claimed that a three inch hole filled with a porous substance will carry away as much water as a hole that size not thus obstructed would do, but it is claimed as an advantage to hold the flow of water in check thus allowing the soil to absorb and become moist at a time when the plants require humidity in the soil, while at the same time any stagnation is prevented; again it is also of advantage to have the subsoil broken, as much of the subsoil of our best land is so compact that the air is practically excluded, but by being loosened and then more porous substance put in place of tenacious subsoils,

the air is allowed to enter and become available for plants.

Another advantage is this, when a thunder shower passes over and a great quantity of water falls it is not allowed to run off the land as is the case where land is plowed in narrow lands, and furrows carry the water away the land becomes as dry in a few hours after the storm as it was before the storm, but with my system, the water finds its way down through these artificial veins and the subsoil takes it up and holds it in reserve for the plants to draw nourishment from as they require.

It is a well known fact that a gravelly porous subsoil that will let the water down and away from the surface of the land is the best soil we can have, and my system is claimed to be as near to the ideal of a gravel subsoil as is possible, and in one respect it is better, because it will hold a portion of the moisture longer and therefore not be

affected by long periods of drought, and further for irrigation purposes it is claimed that soil in which these artificial veins of sand, gravel, stone, or other substance are placed will become more evenly saturated and the moisture will be more available for plant work.

Having thus described my system of draining land, what I claim as my invention and desire to secure by Letters Patent, is.

An improved system of draining land without digging or turning up the soil, which consists in pressing the soil apart to form a passage through it and then filling the space thus formed with drainage material.

Signed at Hamilton, Ontario, this 17th day of June, 1910.

EDWARD WATSON BOWSLAUGH.

In the presence of—

G. NICHOLSON,

WM. BRUCE.