

G. W. MORSE.  
DRAIN PLOW.

APPLICATION FILED APR. 12, 1909.

1,006,116.

Patented Oct. 17, 1911.

2 SHEETS-SHEET 1.

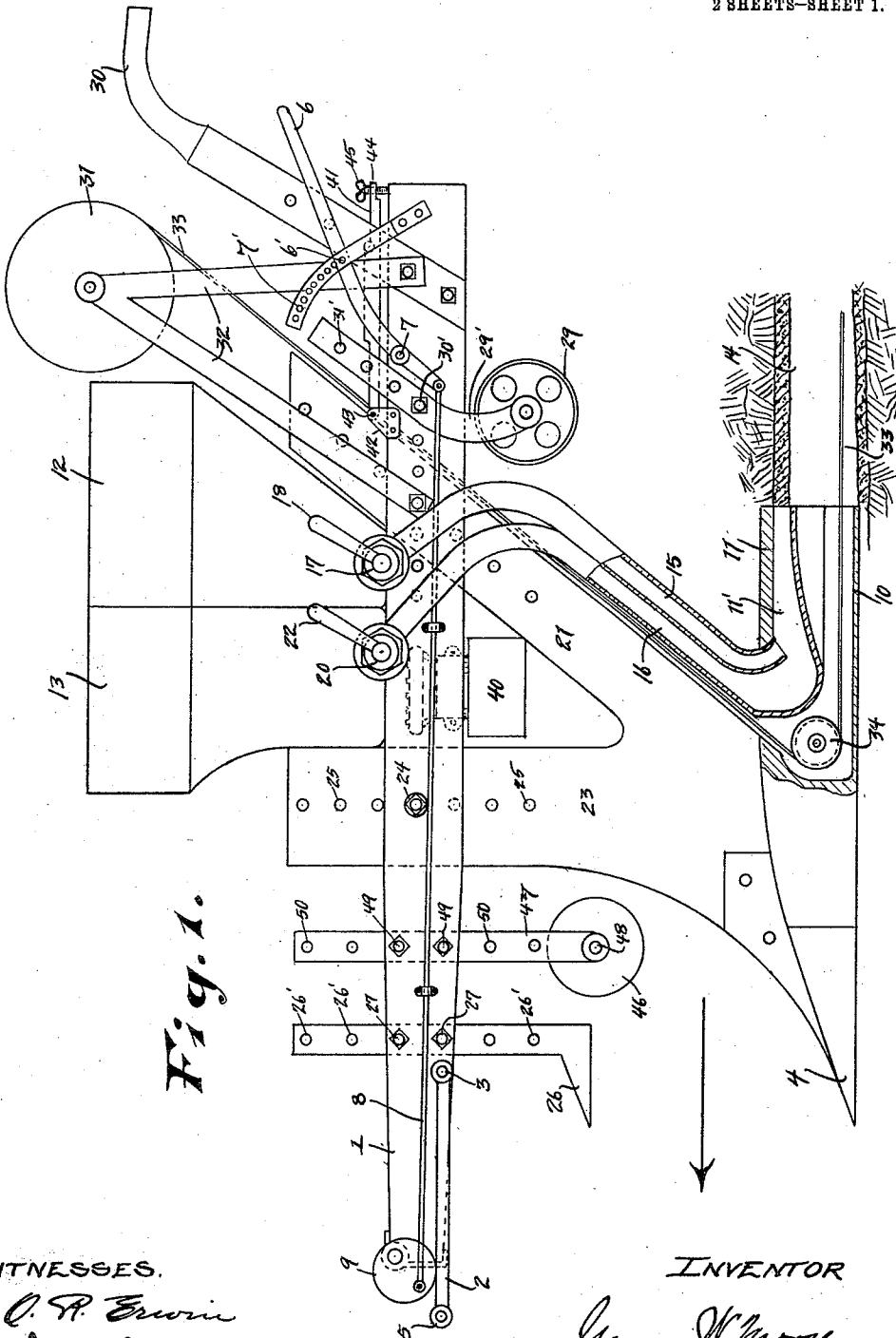


Fig. 1.

WITNESSES.

C. P. Erwin  
L. D. Bremer

INVENTOR

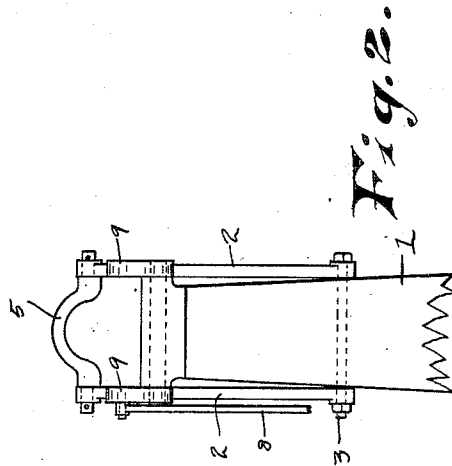
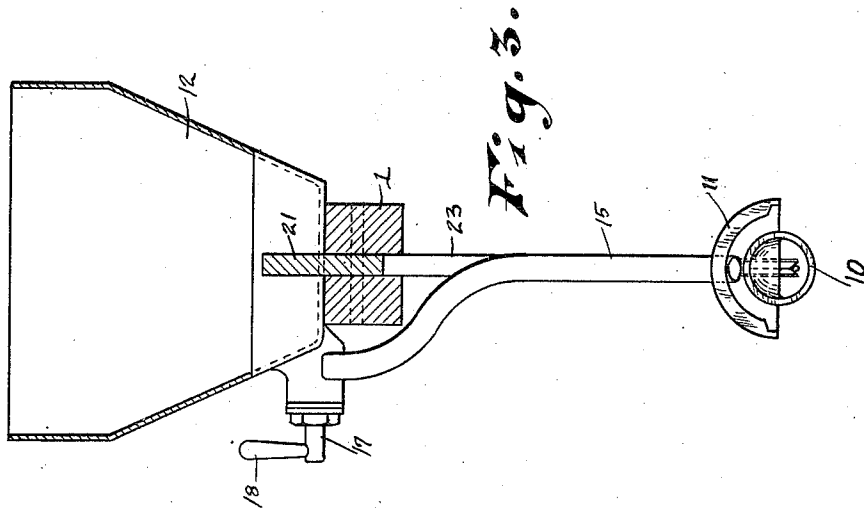
George W. Morse  
By Erwin & Shuler  
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# UNITED STATES PATENT OFFICE.

GEORGE W. MORSE, OF JUNEAU, WISCONSIN.

## DRAIN-PLOW.

1,006,116.

Specification of Letters Patent.

Patented Oct. 17, 1911.

Application filed April 12, 1909. Serial No. 489,508.

*To all whom it may concern:*

Be it known that I, GEORGE W. MORSE, a citizen of the United States, residing at Juneau, county of Dodge, and State of Wisconsin, have invented new and useful Improvements in Drain-Plows, of which the following is a specification.

My invention relates to improvements in draining plows or machines, which are used for forming drains beneath the surface of the ground without removing the soil and it pertains more especially—1st, to the device for forming a permanent duct (above and upon the respective sides of the drain) of tar, pitch, concrete or other plastic substances, as the drain passage is being formed; 2nd, to the device for introducing the sand, coal tar, or other similar substances in the proper relative proportions for forming the permanent duct; 3rd, to the device for simultaneously laying a metallic cable within the duct as the latter is being formed; 4th, to the device for changing and regulating the inclination of the machine, so it will run at a greater or less depth below the surface; 5th, to the device for indicating the inclination of the beam to the horizontal, that the drain may be given the proper inclination; and 6th, to the general construction and arrangement of the cooperating parts, whereby the drain plow may be adjusted at a greater or less distance from the beam.

The construction of my invention is further explained by reference to the accompanying drawings, in which—

Figure 1 represents a side view thereof, part in section. Fig. 2 is a top view of the front end of the beam; and Fig. 3 is a transverse section of the tar and sand receptacles and discharge ducts removed from the other parts of the plow.

Like parts are identified by the same reference figures throughout the several views.

1 represents the draft beam to which the propelling agency is attached, which may be either teams of horses, oxen, or motion may be communicated to it from an engine. The propelling agency is connected to the beam through the clevis 2, which is pivotally connected to the beam by a bolt 3. The inclination of the beam to the surface of the ground is changed by changing the inclination of the clevis to the longitudinal center

of said beam. When it is desirous to run the plow deeper, the point 4 is inclined downwardly by inclining the front end 5 of the clevis upwardly and when it is desirous to change the inclination of the point 4 in the opposite direction, such object is accomplished by inclining the front end 5 of the clevis downwardly. The front end 5 of the clevis is inclined upwardly or downwardly so that the drain plow will run at a greater or less depth by the adjustment of the handle 6. Motion is communicated from the handle 6 to the clevis, through the pivotal bolt 7, rod 8, and eccentric cams 9. It will be understood that an eccentric cam 9 is provided on the respective sides of the beam, so as to bear upon the respective sides of the clevis 2, as shown in Fig. 2. The clevis 2 is retained at any desired point of adjustment by changing the adjustment of the bolt 6' of the handle 6, from one of the series of holes 7' to the other, as will be understood.

10 represents a hollow former, which converges toward the front end and is rigidly connected with the rear end of the point 4 in any convenient manner.

11 represents a hood, which is formed integral with and covers the upper side of the rear end of the former 10 and the space 11' between the former 10 and hood 11 is formed for the reception of the sand, and coal tar or other plastic material with which the permanent duct of the drain is formed.

12 represents a receptacle for sand and 13 represents a receptacle for the plastic material, with which the sand is mixed preparatory to being formed into a permanent duct.

14 represents the permanent duct, which has been formed as the machine is driven forward in the direction indicated by the arrow.

15 represents a sand duct leading from the receptacle 12 to the hood 11.

16 represents a duct leading from the receptacle 13 to the hood 11.

17 represents a valve by which the escape of sand from the receptacle 12 is regulated and controlled.

18 represents an operating handle for changing the adjustment of the valve 17.

20 is a valve for controlling the escape of the plastic material from the receptacle 13.

22 is a handle for adjusting the valve 20.

It will be understood that by thus providing the respective receptacles 12 and 13 with valves, the proper relative quantities of material may be introduced to the drain for forming the permanent duct 14.

The point 4 is connected with the beam through the vertical standard 23 and said parts may be adjusted higher or lower in relation to the beam 1, as circumstances may require, by changing the adjustment of the supporting bolt 24 in the series of holes 25, as will be understood.

26 represents a colter, which is connected with the beam by bolts 27 and the same is adapted to sever roots or remove other obstructions in front of the body of the machine.

An additional brace member 21 may be interposed between the rear portion of the body and the rear portion of the beam, as circumstances require.

26' represents a series of apertures for the bolts 27 by which the colter may be adjusted at different elevations.

29 is a roller which is adjustably supported from the rear of the beam by the standard 29' and a bolt 30' operating in the aperture 31' and is adapted to level and smooth the surface of the ground which has been loosened by the plow, as it has been driven forward.

30 represents the handles by which the operator may guide and move the machine.

When desirous to lay a metallic cable within the duct 14, a reel 31 is supported from the beam 1 by the brackets 32, which support the respective sides of the reel.

33 represents the cable as it is being drawn into the duct 14.

34 represents a roller bearing or idler by which the cable is guided into the duct 14.

It will be understood that the rear end of the cable 33 is first anchored at a fixed point to the ground and that as the machine is driven forward the cable will be unwound from the reel and laid beneath the ground or within the inclosing duct 14, while it is at the same time, covered with tar or pitch.

It will be understood that the point 4 is preferably cylindrical in shape and tapers rearwardly to the cylinder 10, with which it is connected. The point 4 and the cylinder 10 taken together constitute a so-called former, which as they are drawn forward through the soil, pushes the same outwardly thereby forming a long cylindrical opening, while the tar, concrete or other plastic material which flows from the receptacle above into the space between said cylinder 10 and the hood 11 form a supporting arch or duct above said drain opening and prevents the loosened earth from settling back in rear of the moving former, whereby a continuous drain duct is formed as fast as the plow is driven forward, while the earth above the

duct falls back into its former position and is pressed down by the roller 29 or other equivalent means.

40 represents a lamp or oil stove in which a quantity of combustible liquid is stored, whereby the tar or pitch in the receptacle 13 is heated to the desired temperature before it flows into the drain.

41 is a leveling instrument of ordinary construction for indicating the proper inclination of the draft beam of the plow to the surface of the ground, whereby the drain may be given the proper uniform inclination from the starting point to the end. The leveling instrument 41 is pivotally supported at its front end from the beam by the vertical plates 42 and pivotal bolt 43, while it is adjustably supported at its rear end by the screw threaded plate 44 and adjusting hand screw 45. Thus it will be understood that by turning the hand screw down, the rear end of the leveling instrument will be raised, while by a reverse movement of the screw, the rear end of the instrument will be lowered.

46 is a bog cutter, which is revolubly supported from the standard 47 on the bolt 48 and the standard 47 is adjustably supported from the beam 1 by the bolts 49. The standard 47 is provided with a plurality of apertures 50 for the reception of the supporting bolt 49, whereby said standard is adjusted higher or lower in said beam.

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

1. In a drain plow of the class described, the combination with the body of the plow and draft beam proper, of a cylindrical former, a hood inclosing the upper side of such former, a receptacle for plastic material carried by the beam, a duct communicating from said receptacle with the space between said former and hood, means for heating the plastic material in said receptacle, means for regulating the flow of such plastic material through the former as the plow is driven forward, a leveling instrument for indicating the inclination of the beam of the plow, a clevis pivotally connected at its rear end to the beam of the plow, an eccentric cam revolubly supported from the beam above and in contact with the sides of said clevis, an operating lever pivotally supported near the rear end of said beam, a rod pivotally connected at one end with the lower end of said lever and at its opposite end with said eccentric cam, whereby the front end of said clevis may be supported higher or lower by the adjustment of said lever.

2. In a drain plow of the class described, the combination with the draft beam, of a cylindrical former, a hood inclosing the upper side only of said former, a receptacle

for plastic material carried by the beam, means for heating the material in said receptacle, a duct communicating from said receptacle with the space between said  
5 former and hood, means for regulating the flow of such plastic material through the former as the plow is drawn forwardly, a cable supporting reel revolubly supported from the upper side of said beam, a roller  
10 revolubly supported within the annular portion of said former, means for leading the cable from said reel to and around said roller and longitudinally through the tubular por-

tion of said former, whereby the cable carried by said reel when anchored in rear of  
15 said former, will be drawn from said reel and laid within a duct formed by said plastic material as the plow is being drawn forwardly.

In testimony whereof I affix my signature 20  
in the presence of two witnesses.

GEORGE W. MORSE.

Witnesses:

F. W. GEBHARDT,  
THEO. P. HENRY.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,  
Washington, D. C."

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