No. 774,458. PATENTED NOV. 8, 1904.

J. H. SYLVESTERSEN.

DITCHING MACHINE.

APPLICATION FILED MAR. 7, 1904.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

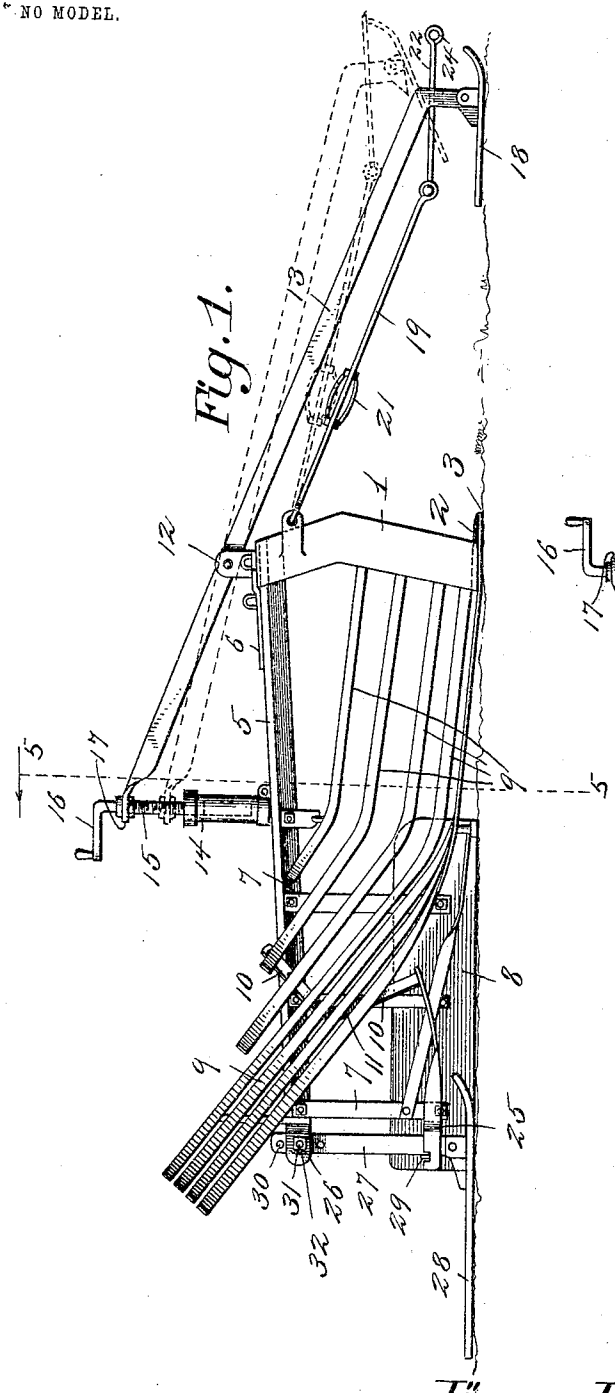
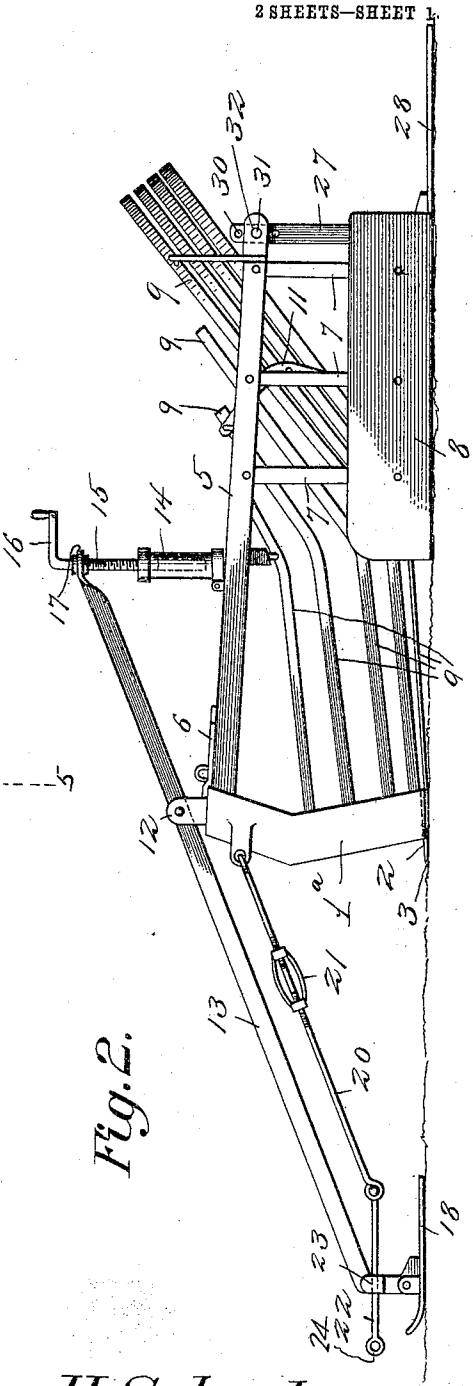


Fig. 2.



Witnesses

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NO MODEL. 2 SHEETS—SHEET 2.

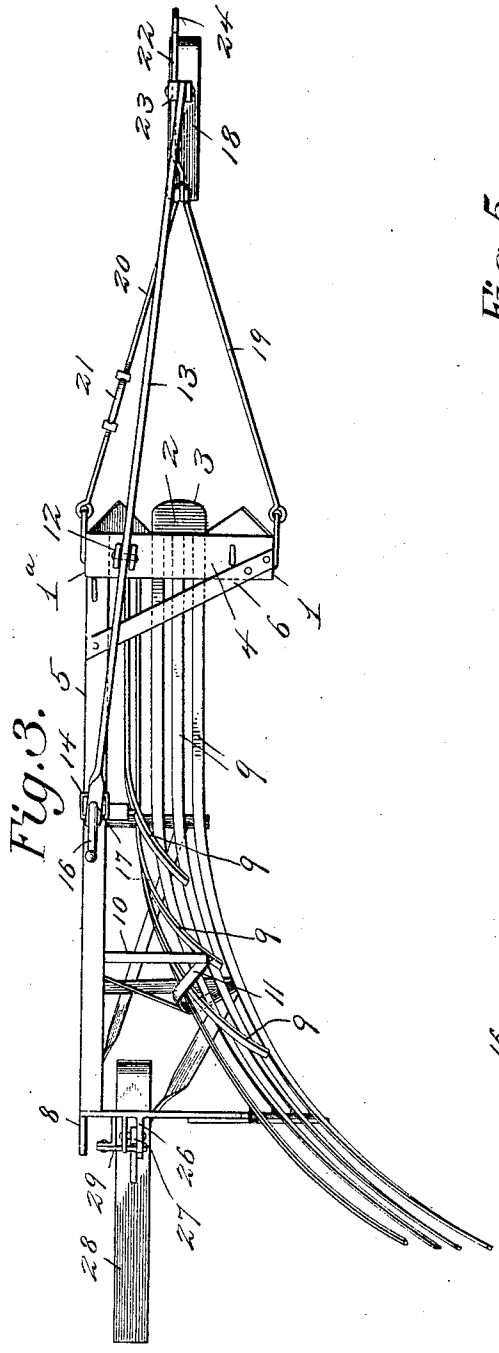


Fig. 3.

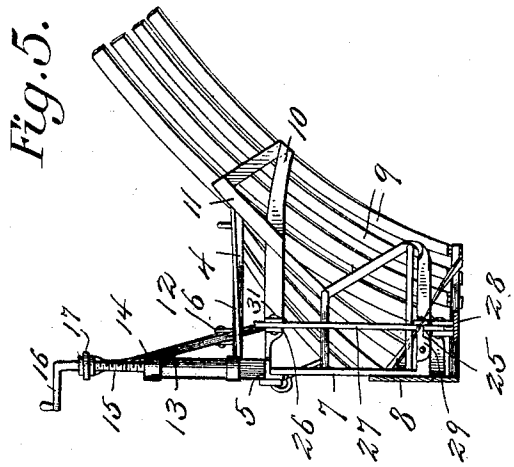


Fig. 5.

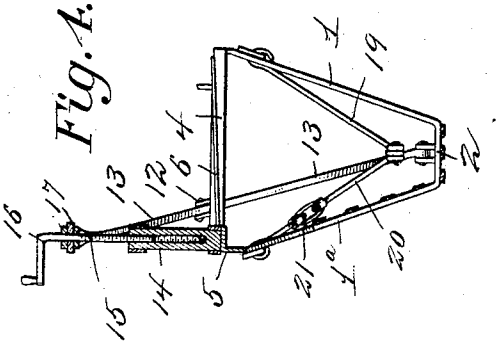


Fig. 4.

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UNITED STATES PATENT OFFICE.

JÖRGEN H. SYLVESTERSEN, OF DUNDEE, ILLINOIS.

DITCHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 774,458, dated November 8, 1904.

Application filed March 7, 1904. Serial No. 197,019. (No model.)

To all whom it may concern:

Be it known that I, JÖRGEN H. SYLVESTERSEN, a citizen of the United States, residing at Dundee, in the county of Kane and State of Illinois, have invented a new and useful Ditching-Machine, of which the following is a specification.

This invention relates to ditching-machines, and particularly to that class of ditching-machines which are used for the purpose of making excavations for the laying of tile for draining purposes and the like.

The invention has for its object to provide a machine of this class which shall be simple in construction, durable, and efficient in operation, which may be conveniently guided and gaged as to the running depth thereof, and which without excessive frictional resistance shall be capable of digging a ditch and depositing the excavated material at one side thereof.

With these and other ends in view the invention consists in the improved construction, arrangement, and combination of parts, which will be hereinafter fully described, and particularly pointed out in the claims.

In the accompanying drawings has been illustrated a simple and preferred form of embodiment of my invention, it being understood, however, that I do not thereby necessarily limit myself to the specific structural details therein exhibited, but reserve the right to any changes, alterations, and modifications which may be resorted to within the scope of my invention and without departing from the spirit or sacrificing the efficiency of the same.

In said drawings, Figure 1 is a side elevation of a ditching-machine constructed in accordance with the principles of my invention. Fig. 2 is a side elevation of the same seen from the opposite side. Fig. 3 is a top plan view. Fig. 4 is a transverse sectional view taken through the draft-adjusting mechanism and looking in a forward direction. Fig. 5 is a transverse sectional view taken on the line 5 5 in Fig. 1.

Corresponding parts in the several figures are indicated by similar numerals of reference.

My improved ditching-machine embodies in its construction a cutting-frame comprising a pair of angular side members 1 1^a, connected at their lower ends by the horizontally-disposed knife or blade 2, the cutting edge of which, 3, projects in front of the lower ends of the side members and is preferably rounded, as shown. The side members 1 1^a of the cutter-frame preferably diverge slightly in an upward direction and are connected at their upper ends by means of a cross-piece 4. The side members 1 1^a are obviously composed of relatively thin blades, which will readily cut into and through the soil, so as to enable a ditch or trench of the requisite depth to be dug without excessive frictional resistance.

The side member 1^a, which is disposed at what may be termed the "land side" of the machine, is connected at its upper end with the front end of a top frame-bar 5, which may be constructed of angle-iron and which is connected, by means of an obliquely-disposed brace 6, with the top cross-piece 4. The frame-bar 5, which may be constructed advantageously of angle-iron, is provided near its rear end with a plurality of downwardly-extending hangers 7, to the outer sides of which a shield 8, constituting the landside of the machine, is suitably secured.

Suitably connected with the rear side of the cutter 2 and with the rear side of the side member 1^a are a plurality of rearwardly-extending guide-bars 9, which coöperate to constitute a moldboard upon which the slice of soil excavated by the machine is elevated obliquely in a rearward direction and overturned at the side of the ditch or trench. The bars 9, constituting the moldboard, are suitably spaced apart and are gradually tilted, so as to deliver the furrow-slice in the desired direction. Suitable braces 10 are provided, which serve to support the bars 9 at suitable intervals and to retain them in the desired relative position, said braces being secured to connect with the frame-bar 5, the landside 8, and the hangers 7. Said braces or supporting devices include a **V**-shaped brace 11, which is connected by intermediate braces with rigid parts of the frame of the machine, so as enable the guide-bars 9, constituting the moldboard, to be tilted in the desired direction. The inner or upper guide-bars 9 ter-

minate short of the rear end or delivery-point of the machine, as shown, inasmuch as no necessity exists for extending them entirely to the point of delivery. The front top piece 4 is provided with a pair of upwardly-extending lugs 12, between which is pivotally mounted a beam 13. The frame-bar 5 supports an upright 14, which is hingedly connected with said frame-bar, so as to be capable of tilting in a forward direction, and said upright constitutes a casing in which operates an adjusting-screw 15, having at its upper end a crank or handle 16. The adjusting-screw 15 has swivel connection with a lug 17, extending rearwardly from the beam 13. It will be seen that the latter, by manipulating the screw 15, may be raised or lowered at its outer or front end. Hingedly connected with the front end of the beam 13 is a shoe 18, having an upwardly-turned front end, whereby it is enabled to travel over the ground without being interfered with by such ordinary obstacles as may present themselves.

The upper ends of the side members 1 and 1^a are provided on their upper sides with bearings for the rear ends of a pair of draft-rods 19 and 20, the latter of which is composed of two separate pieces connected by a turnbuckle 21, so that the said draft-bar may be lengthened or shortened, as may be required. The front ends of the draft-bars 19 and 20 are connected with a link 22, which extends forwardly through a guide-loop 23 upon one side of the beam 13 and terminates at its front end in an eye or clevis 24 for the attachment of the draft.

Suitably secured to braces 10 at the rear end of the machine are a pair of clips or bearings 25 and 26 for a vertically-adjustable rod 27, carrying at its lower end a shoe 28, adapted to travel in the bottom of the trench that is being dug. The clips 25 and 26 are U-shaped, as shown, and the former, which is the lower one, is provided with a pivoted latch member 29 for the purpose of retaining in position the shoe-carrying bar 27. The upper end of the latter is provided with a plurality of transverse perforations 30, adapted to receive a pin or bolt 31, by means of which it may be secured relatively to the U-shaped clip 26, the sides of which are provided with perforations 32 for the passage of said bolt.

From the foregoing description, taken in connection with the drawings hereto annexed, the operation and advantages of my invention will be readily understood by those skilled in the art to which it appertains. By manipulating the adjusting-screw 15 it will be seen that the beam 13 may be adjusted to elevate or to lower the shoe carried at its front end, thereby regulating the depth to which the cutting device shall be permitted to enter into the soil. The shoe 18 obviously travels upon the surface of the soil in advance of the cutting mechanism, which on entering into the soil excavates a slice of a thickness which is governed by the depth to which it is permitted to enter the soil by the previous adjustment of the front shoe. The slice excavated by the machine will slide upwardly and rearwardly in a lateral direction upon the moldboard and will be turned and deposited upon the ground adjacent to the side of the trench, as will be readily understood. The shield or guard 8, constituting the landside, will assist largely in preventing the ditch from caving in and the shoe 28, supporting the rear end of the machine and traveling in the bottom of the trench, will assist in preventing the cutting parts of the device from being deflected from the desired course.

Any tendency to side draft may be corrected by properly adjusting the turnbuckle 21, whereby the drop-bar 20 may be lengthened or shortened, as may be desired.

The general construction of this machine is simple and inexpensive, and it will be found eminently useful and efficient for the purposes for which it is intended.

It is obvious that while the machine has been described as being for the purpose of making excavations for the laying of tile for draining purposes and the like the said machine may be usefully employed for general ditching and excavating purposes and for the making of open ditches. It is also obvious that the machine may be made either right or left hand in order that the excavated dirt may be deposited at either side of the excavation.

Having thus described my invention, I claim—

1. In a device of the class described, a cutting device consisting of side members constituting cutters, a blade connecting the lower ends of said side members, and a cross-piece connecting the upper ends of the same, spaced bars extending rearwardly from the cutting device and constituting a moldboard, a pivoted beam supported by the top cross-bar of the cutting device, means for adjusting said beam and for retaining the same at the desired adjustment, a shoe mounted hingedly at the front end of said beam, and draft means applied directly to the side members of the cutting device.

2. In a device of the class described, a cutting device comprising side members constituting cutters, a blade connecting the lower ends of said side members and a cross-piece connecting the upper ends of the same, a frame-beam extending rearwardly from the upper ends of one of the side members, a beam mounted pivotally upon the cross-beam connecting the upper ends of the side members, a screw-casing connected hingedly with the rearwardly-extending frame-beam, a screw in said casing having swivel connection with the rear end of the pivoted beam, and a shoe connected hingedly with the front end of the latter.

3. In a device of the class described, a cutting-frame, a beam connected pivotally with the same, means for adjusting said beam and for retaining it at the desired adjustment, a shoe connected hingedly with the front end of said beam, draft-bars connected directly with the sides of the cutting-frame, one of said draft-bars being composed of two separate sections and a turnbuckle connecting the same, a guide-loop upon the front end of the pivoted beam, and a link connecting the front ends of the draw-bars and extending forwardly through said guide-loop for the attachment of the draft.

4. In a device of the class described, a cutting-frame having side members and a bottom member constituting cutters, spaced bars extending rearwardly from said frame and constituting a moldboard, supporting means for said spaced bars, a beam connected pivotally and adjustable with the cutter-frame, a shoe at the front end of said beam, draft means connected directly with the side members of the cutting-frame and having slidable connection with the front end of the beam, and a vertically-adjustable shoe at the rear end of the machine.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JÖRGEN H. SYLVESTERSEN.

Witnesses:

JOHN HOFFMAN,

GEOGE BURMAN.