

No. 834,645.

PATENTED OCT. 30, 1906.

J. H. SYLVESTERSEN.
DITCHING MACHINE.

APPLICATION FILED FEB. 17, 1908.

2 SHEETS—SHEET 1.

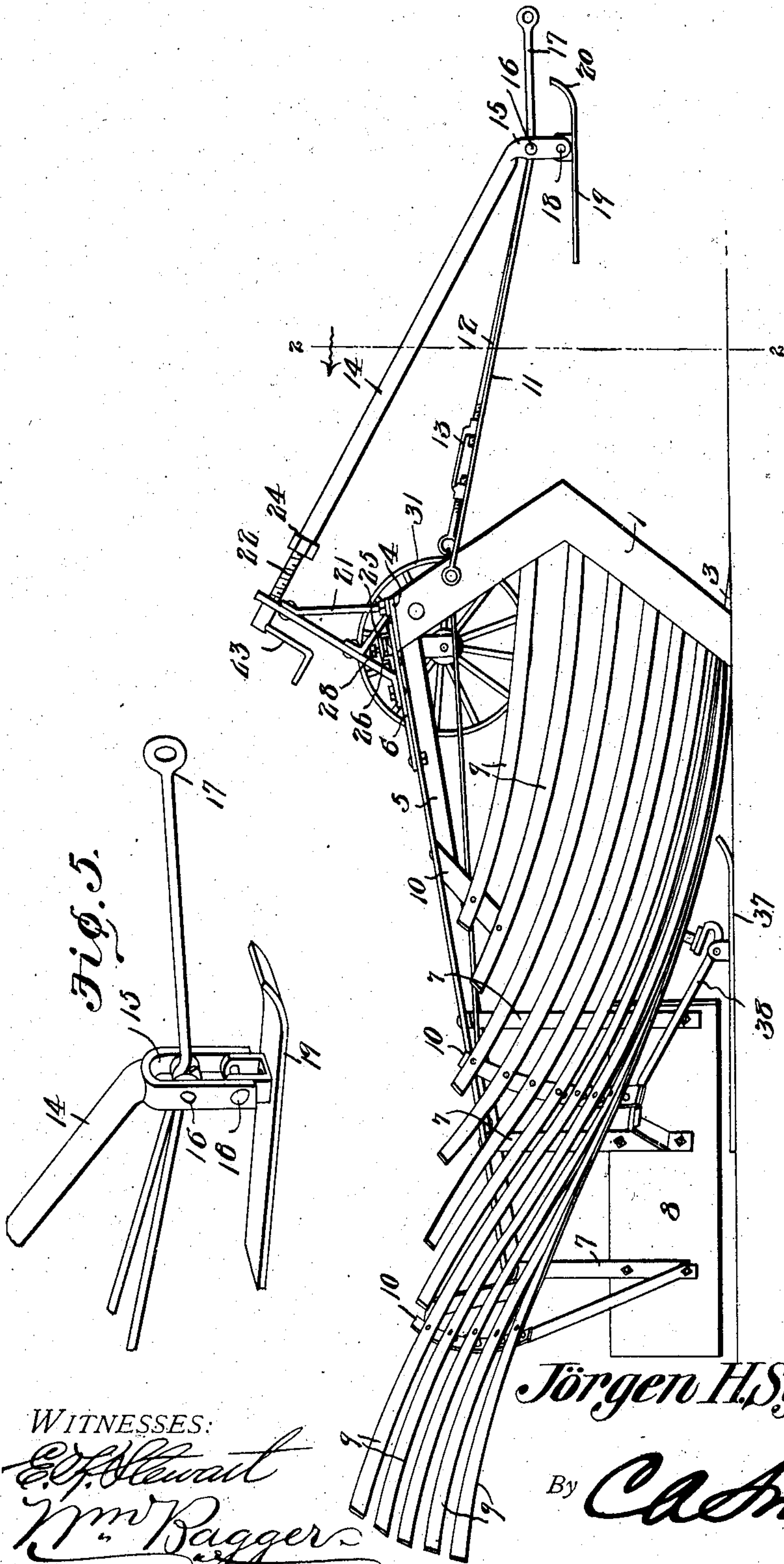


Fig. 1.

Fig. 5.

WITNESSES:

E. F. Stewart
Wm. Ragger

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INVENTOR.

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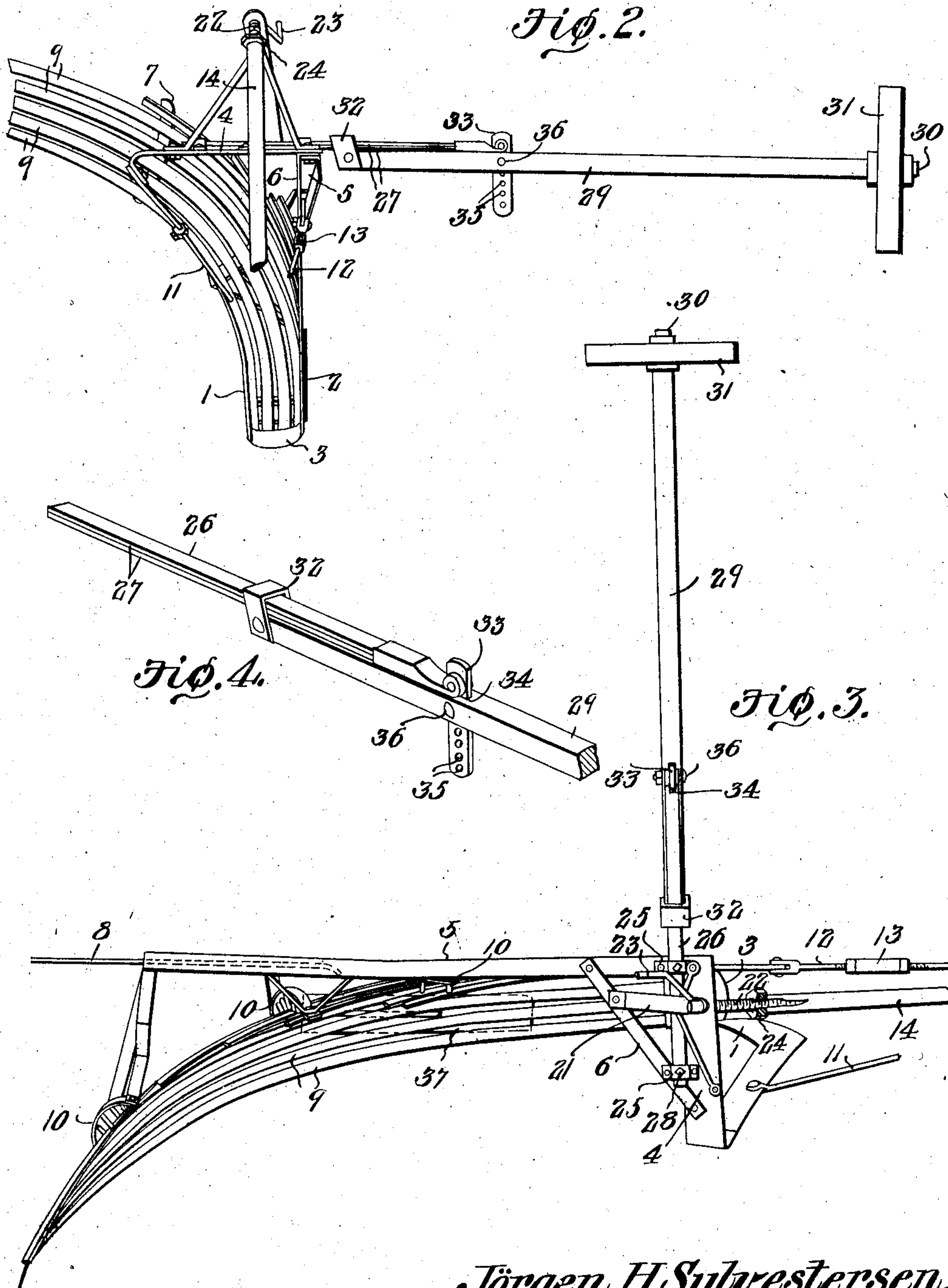
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UNITED STATES PATENT OFFICE.

JORGEN H. SYLVESTERSEN, OF DUNDEE, ILLINOIS.

DITCHING-MACHINE.

No. 834,645.

Specification of Letters Patent.

Patented Oct. 30, 1906.

Application filed February 17, 1906. Serial No. 301,668.

To all whom it may concern:

Be it known that I, JORGEN 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; and the invention has particular reference to that type of ditching-machines an example of which may be found in Letters Patent of the United States No. 774,458, granted to myself on the 8th day of November, 1904.

The present invention has for its object to simplify and improve the construction and operation of this class of machines, to improve the steering-gear and the means for regulating or gaging the depth to which the machine shall cut, and to provide a land-wheel and improved supporting means for the same.

With these and other ends in view, which will readily appear as the nature of the invention is more fully understood, the same consists in the improved construction, novel 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 the invention, it being, however, understood that no limitation is necessarily made to the precise structural details therein exhibited, but that changes, alterations, and modifications within the scope of the invention may be resorted to when desired.

In the drawings, Figure 1 is a side elevation of a ditching-machine constructed in accordance with the principles of the invention. Fig. 2 is a vertical sectional view taken on the plane indicated by the line 2 2 in Fig. 1. Fig. 3 is a top plan view. Fig. 4 is a perspective view of the supporting means for the land-wheel, showing the same detached from the machine. Fig. 5 is a perspective detail view showing the guiding-shoe and supporting means for the same.

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

The improved ditching-machine embodies in its construction a cutting-frame compris-

ing a pair of side members 1 2, connected at their lower ends by the approximately horizontally disposed knife or blade 3, the cutting edge of which preferably projects in front of the lower ends of the side members and is rounded, as shown. The side members of the cutter-frame are connected at their upper ends by means of a cross-piece 4. The side members 1 2 are composed of relatively thin and stout blades which will relatively cut into and through the soil, so as to enable a ditch or trench of the requisite depth to be dug without excessive friction or resistance.

The side member 2 at the landside 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 oblique brace 6, with the top cross-piece 4. The frame-bar 5 is provided near its rear end with downwardly-extending hangers 7, carrying a shield 8, which constitutes the landside of the machine.

Suitably connected with the rear side of the cutter 3 and with the rear side of the side member 2 are a plurality of rearwardly-extending guide-bars 9, which cooperate to constitute a moldboard upon which a 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. It will also be particularly observed that these guide-bars are smoothly, evenly, and gradually curved from their point of connection with the members 2 and 3 and to their terminal ends, angles or abrupt turns being entirely avoided, so that the excavated material will move smoothly and steadily in an upward direction to the point of discharge. 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 suitably connected with the frame-bar 5 and with the hangers 7.

Draft-bars 11 and 12 are connected, respectively, with the vertical cutting members 1 and 2, one of said draft-bars, 12, being composed of two separate members connected by a turnbuckle 13, so that the said draft-bar may be lengthened or shortened to provide for the lateral adjustment of the

draft. 14 is a tubular bar having at its front end a depending fork 15, the side members of which are connected by a bolt 16, with which the draft-bars 11 and 12 are connected. A draft-link 17 is also connected with the bolt 16 for the direct attachment of the draft. The fork 15 also carries a bolt or member 18, upon which is hingedly mounted a shoe 19, adapted to travel upon the surface of the ground in front of the machine, said shoe being provided with an upturned front end 20, whereby it is enabled to slide over such obstructions as may present themselves. To provide for the vertical adjustment of the shoe, thereby gaging the depth to which the machine shall be permitted to cut into the ground, there is mounted upon the members 4, 5, and 6, which may be regarded as constituting the top of the machine, a bracket 21, in which is swiveled a screw 22, having an operating-crank 23, said screw operating in or through a nut 24 at the upper end of the tubular rod 14. It will be readily seen that by manipulating the adjusting-screw the shoe 19 may be raised or lowered within the requisite limits, which will be determined by the length of the screw, and that said shoe will be retained securely at various adjustments.

In keepers 25, which are secured upon the top of the machine, there is mounted a flat spring 26, which is preferably made up of a plurality of leads 27, said spring being retained adjustably in the keepers, as by means of set-screws 28. 29 is a bar which is provided at one end with a spindle 30, upon which a land-wheel 31 is supported for rotation. The opposite end of the bar 29 has a keeper 32 surrounding the spring 26. Pivotally connected with the outer end of the spring 26 is a link 33, that extends through a slot 34 in the bar 29, said link being provided with a plurality of apertures 35 for engagement with a pin or securing member 36, that extends transversely through the bar 29, which latter may thus be adjustably connected with the link 33, thus enabling the land-wheel to be raised or lowered, according to the depth of the trench that is being dug. The land-wheel serves to sustain the machine in an upright position while in operation, and the presence of said land-wheel also greatly facilitates the steering of the device. Owing to the presence of the spring 26 the land-wheel will readily pass over any obstructions that may be found in the path thereof without distorting the position of the machine or interfering with the successful operation of the latter.

A shoe 37 is provided, which is adapted to travel in the bottom of the trench that is being dug, said shoe being hingedly connected with a suitably-supported bracket member 38 beneath the moldboard of the machine.

The shoe 37 is set well forward under the

moldboard, where the strain upon the moldboard is the heaviest and where the support is most needed, the point at which the said shoe 37 is hingedly supported being in front of the forward extremity of the shield or landside 8. This is materially different from the construction exhibited in my former patent, No. 774,458, to which reference has hereinbefore been made, and where the shoe (there designated 28) extends to the rear of the shield or landside. By the present construction the plow is better fitted to resist the severe strain to which in practice it will be subjected.

From the foregoing description, taken in connection with the drawings hereto annexed, the operation and advantages of this invention will be readily understood by those skilled in the art to which it appertains.

The construction is simple and inexpensive, and the machine has been practically found to be thoroughly efficient for the purposes for which it is designed.

Having thus described the invention, what is claimed is—

1. In a machine of the class described, a cutting-frame including side members and a bottom cutting-blade, in combination with spaced bars connected with one side member and with the bottom member of the frame, said bars being curved smoothly and evenly from their point of attachment to their terminal ends to constitute a moldboard free from angles and other obstructions to the passage of excavated material, a shield or landside, and a shoe hingedly supported beneath the moldboard, in front of the landside, in close proximity to the bottom cutting-blade.

2. In a machine of the class described and having a cutting-frame, a laterally-extending flat spring supported adjustably on top of said frame, a bar having a keeper engaging said spring, a link pivotally connected with the latter, means for connecting said link adjustably with the bar, and a land-wheel supported for rotation upon the latter.

3. In a machine of the class described, a cutting-frame, a laterally-extending flat spring supported on top of said frame, a land-wheel-carrying bar having a keeper engaging said spring, a link pivotally connected with the latter and extending through a slot in the land-wheel-carrying bar said link being provided with a plurality of apertures, and a connecting member extending transversely through the bar and through an aperture in the link.

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

JORGEN H. SYLVESTERSEN.

Witnesses:

FRED J. BATT,
H. C. WENDT.