(No Model.) 2 Sheets—Sheet 1.

G. A. SHIELDS.

DITCHING MACHINE.

No. 536,401. Patented Mar. 26, 1895.

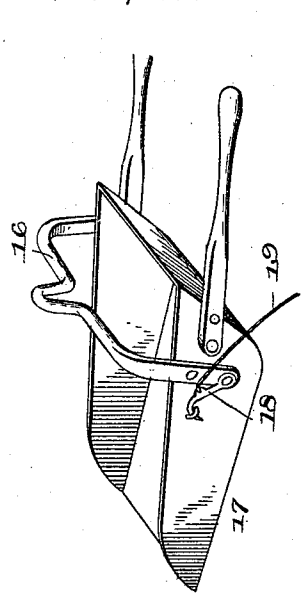

Fig. 4.

Fig. 1.

Witnesses

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 2.

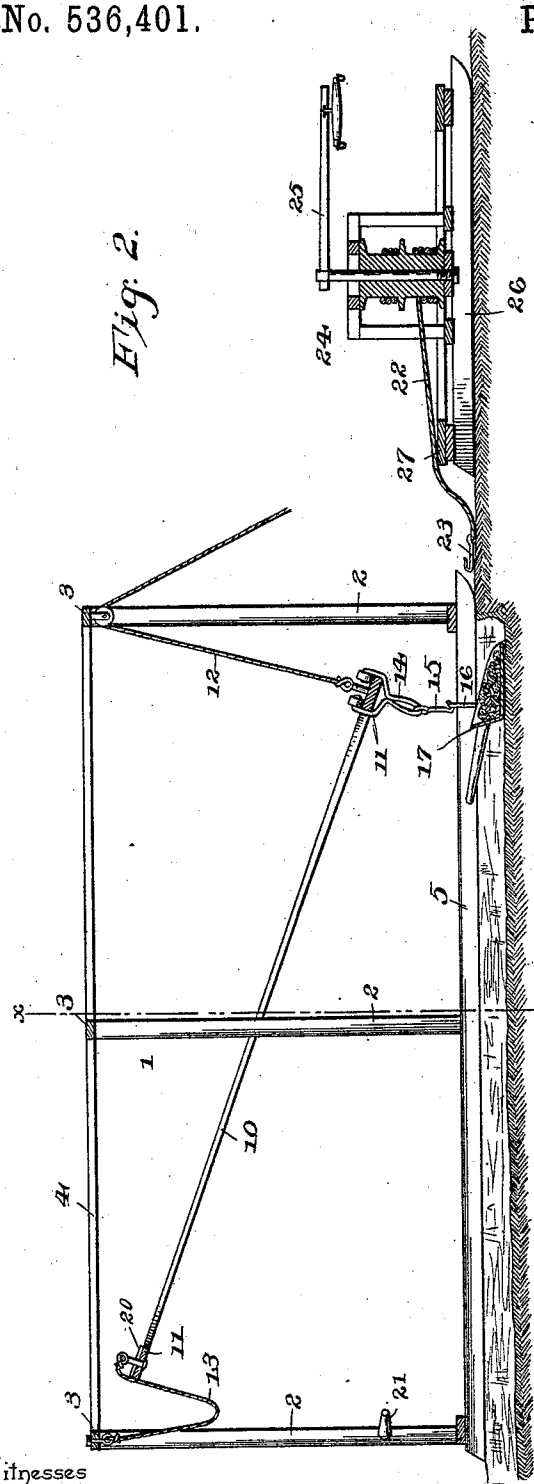


Fig. 5.

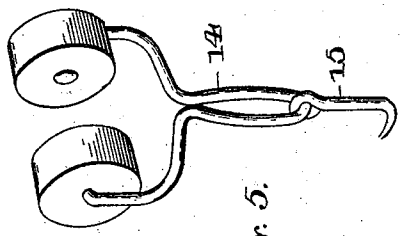
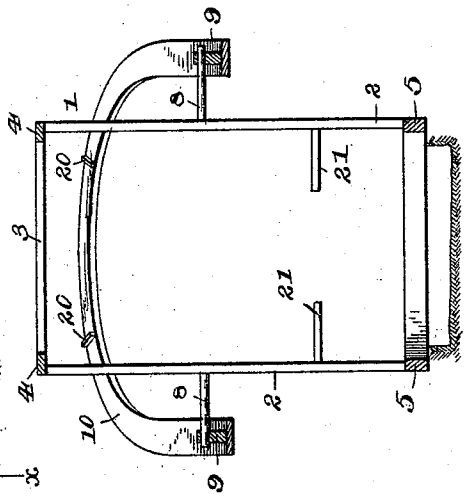


Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

GEORGE A. SHIELDS, OF BRISTOL, WISCONSIN.

DITCHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 536,401, dated March 26, 1895.

Application filed November 17, 1894. Serial No. 529,175. (No model.)

To all whom it may concern:

Be it known that I, GEORGE A. SHIELDS, a citizen of the United States, residing at Bristol, in the county of Kenosha and State of Wisconsin, have invented a new and useful Ditching-Machine, of which the following is a specification.

This invention relates to ditching machines; and it has for its object to provide a new and useful machine of this character especially adapted for use in connection with marshy or soft ground, for the purpose of providing means whereby, with but a little expenditure of power or with one animal, open ditches can be quickly and readily dug or cleaned.

With these and other objects in view, which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

In the drawings, Figure 1 is a perspective view of a ditching machine constructed in accordance with this invention showing in dotted lines the manner in which the machine may be moved along the ground. Fig. 2 is a central longitudinal sectional view of the same. Fig. 3 is a cross sectional view on the line *x*—*x* of Fig. 2. Fig. 4 is a detail in perspective of the scraper. Fig. 5 is a detail in perspective of the wheeled carrier.

Referring to the accompanying drawings, 1 designates an upright track supporting frame that is adapted to straddle or span the ditch being dug or cleaned. The said upright track supporting frame 1, essentially comprises a parallel series of frame uprights 2, connected at their upper ends by the transverse cross bars 3, and the longitudinal connecting bars 4, the latter of which bars connect the upper ends of the frame uprights in the same longitudinal row. The parallel connected frame uprights 2, comprising the upright track supporting frame, are secured on the opposite connected sled runners 5, which form a sled support for the track supporting frame, and which are spaced apart sufficiently so as to stand or run at both sides of the ditch, and the said sled affords an easy means for permitting the track supporting frame to be readily moved over the ground or to shift the position thereof as the work progresses.

The opposite intermediate frame uprights 2, of the track supporting frame 1, are provided at a point intermediate of their upper and lower ends with the offstanding outwardly disposed supporting arms 8, to which are pivotally connected, by means of the pivot hangers 9, the opposite side portions of the tilting elliptical track 10. The tilting elliptical track 10, is provided with a flat upper side, and is arranged to have the opposite curved or rounded ends 11, thereof, work within the opposite end pairs of frame uprights 2, while the opposite side portions of said track work outside of the intermediate frame uprights, and are adapted to be disposed along opposite banks or sides of the ditch so that the excavated material may be dumped at both sides of the ditch in the manner to be presently described.

The elliptical tilting track 10, is preferably pivotally connected to the intermediate frame uprights at an eccentric point and it is weighted at one end so that such end will normally fall of its own weight to a position in close proximity to the ground while the opposite end will be elevated, and to the normally depressed weighted end of the said elliptical track is connected one end of the track hoisting rope 12, guided to pass over the cross bar for one end pair of frame uprights 2, and connected with the winding device or capstan to be presently referred to.

The track hoisting rope 12, provides means for elevating the normally depressed end of the track to an elevated position, and to the other end of the track is connected the lower end of the flexible limiting connection 13, the upper end of which is connected to one of the end cross bars of the frame and provides means for limiting the tilt of the track in one direction. The tilting elliptical track 10, supports for travel thereon the wheeled carrier 14, which is provided with a pivoted hanger hook 15, that is adapted to detachably engage in the pivoted bail 16, of an ordinary scoop scraper 17. The ordinary scoop scraper 17, is provided with any suitable bail lock 18, having a trip cord connection 19 therewith, whereby the scraper can be dumped of its contents

when the same has been carried out to either side of the ditch by the carrier, which runs on either opposite side portion of the track from one end thereof to the other.

When the scoop scraper 17, is filled, the pivoted bail thereof is locked by means of the lock 18, to prevent the scraper from tilting and losing its contents. The bail 16, of the scraper is then engaged in the pivoted hanger hook 15, of the carrier, which is on the normally depressed end portion of the track. By then operating the track hoisting ropes 12, the depressed end of the track will be elevated and the carrier with the loaded scraper will run out on either side portion of the track over the sides of the ditch, and at any point along the sides of the ditch over which the sides of the track extend, the scraper may be dumped of its contents by tripping the lock 18. After the scraper has been dumped of its contents the carrier continues to run down the inclined track to the then lower end thereof until it reaches a suitable stop projection 20, two of which are located at one curved end of the track. When the carrier reaches either of the stop projections 20, the pivoted hanger hook 15, thereof, will swing sharply against an inwardly disposed trip arm 21, which is projected from each of the frame uprights at one end of the frame, and this engagement of said hook 15, with the trip arm will cause the hook to become disengaged from the bail of the scraper so as to throw the same back again into the ditch ready for being filled. As the track hoisting rope is eased up the track will tilt to its normal position and the carrier will run back to its starting point ready for another loaded scraper.

While the normally depressed end of the track is being elevated with the loaded scraper, an empty scraper is loaded by being dragged through the ditch by means of the drag rope 22. The drag rope 22, is provided at one end with the hook 23, adapted to engage the bail of the empty scraper, and the other end of said rope winds and unwinds on the capstan 24, in the same direction as the track hoisting rope 12, that also winds and unwinds on said capstan.

The capstan 24, is of any ordinary construction operated by the sweep 25, and is mounted on the sled frame 26, which is of a sufficient width to span the ditch in front of the track. The sled frame 26, that carries the capstan is also provided with a circular walk 27, for the animal, so that the animal operating the capstan will not have to walk in the mud or soft mire of marshy ground, and the weight of the animal on the sled frame will generally be sufficient to hold the capstan properly in place while operating the tilting track and the empty scoop scrapers.

The sleds for the capstan and track supporting frame, may be readily shifted as the work progresses, in any suitable manner, but by carrying the drag rope 22, that is used for loading the scrapers forward and engaging the hook thereof with a suitable anchor 28, as illustrated in dotted lines, the animal operating the sweep 25, can drag the machine along to the position desired.

Changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus described the invention, what is claimed, and desired to be secured by Letters Patent, is—

1. In a ditching machine, a track supporting frame adapted to span a ditch, a tilting track mounted on said frame, a carrier arranged to travel on said track, a scraper adapted to be detachably connected with said carrier, means for tilting the track, and means for automatically disconnecting the scraper from the carrier, substantially as set forth.

2. In a ditching machine, a track supporting frame adapted to span a ditch, a tilting track pivotally supported on the frame and normally tilted in one direction, means for tilting said track in an opposite direction, a wheeled carrier arranged on said track, the scraper adapted to be detachably connected with said carrier, and means for disconnecting the scraper from the carrier to precipitate the former into the ditch, substantially as set forth.

3. In a ditching machine, a track supporting frame adapted to span a ditch, a tilting elliptical track mounted on said frame, and a scraper carrier arranged to travel on the track, substantially as set forth.

4. In a ditching machine, a track supporting frame, an elliptical track pivotally mounted on said frame and normally tilted in one direction, means for tilting said track in an opposite direction, a wheeled carrier arranged on said track, a scraper adapted to be detachably connected with said carrier, and means for automatically disconnecting the scraper from the carrier at one end of the track, substantially as set forth.

5. In a ditching machine, the combination of a track supporting frame, a track pivotally mounted on said frame and normally tilted in one direction, a track hoisting rope connected with the normally depressed end of the track to elevate the same, a carrier arranged to travel on the track, the scraper adapted to be detachably connected with the carrier, a drag rope adapted to be connected with the empty scraper, and operating means for simultaneously operating the track hoisting and drag ropes to elevate or tilt the track in one direction at the same time the empty scraper is being filled, substantially as set forth.

6. In a ditching machine, the combination of the track supporting frame arranged on a sled and comprising opposite parallel connected frame uprights, the intermediate of which uprights are provided with outwardly disposed supporting arms, an elliptical tilting

track pivotally suspended from said supporting arms and normally tilted in one direction, a flexible limiting connection with one end of said track, a sled supported capstan device, separate track hoisting and drag ropes connected with said capstan device, and the former of which ropes is connected with the normally depressed end of the track, the carrier, and the scraper detachably connected with the carrier, substantially as set forth.

7. In a ditching machine, a track supporting frame provided at one end with opposite inwardly disposed trip arms, a tilting track pivotally mounted on the frame and provided at one end with separated stop projections, means for tilting said track, a carrier arranged to travel on the track and provided with a pivoted hanger hook adapted to swing against said trip arms, and the scraper having a bail adapted to be detachably connected with said hanger hook, substantially as set forth.

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

GEORGE A. SHIELDS.

Witnesses:
EDWARD JONES,
HARRY E. BAIN.