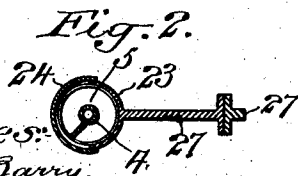
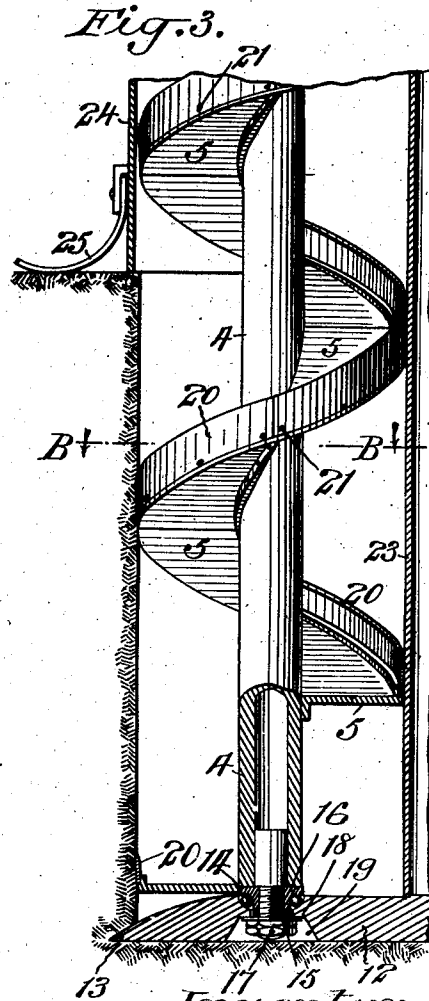
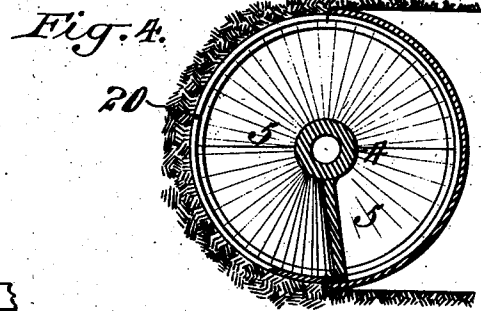
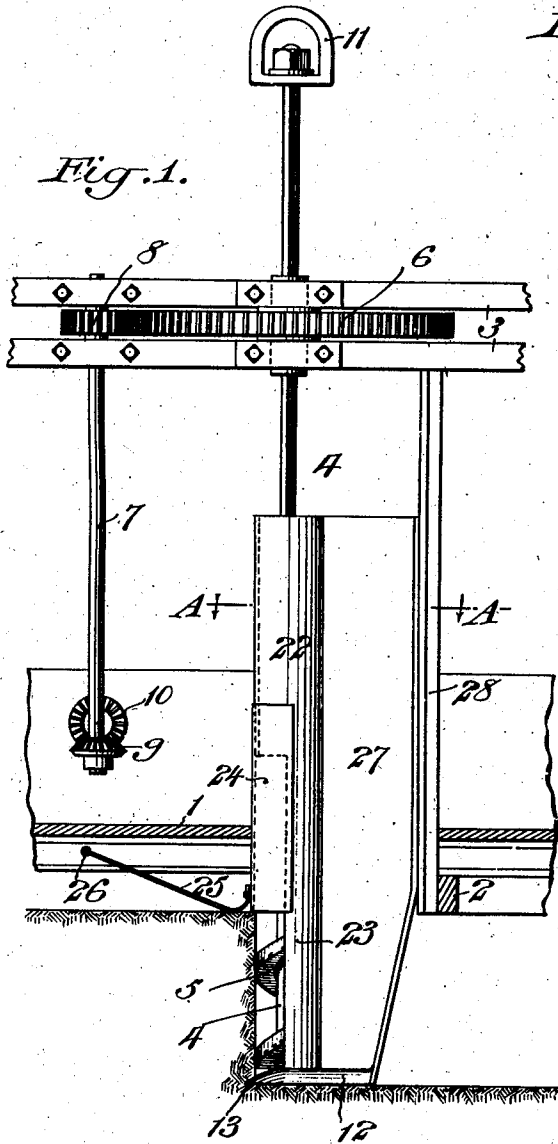


No. 814,982.

PATENTED MAR. 13, 1906.

J. NIXON.
DITCHING MACHINE.
APPLICATION FILED JUNE 30, 1905.



Witnesses:
J. George Barry,
Harry Wheme.

Inventor:
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UNITED STATES PATENT OFFICE.

JACOB NIXON, OF STOCKPORT, IOWA.

DITCHING-MACHINE.

No. 814,982.

Specification of Letters Patent.

Patented March 13, 1906.

Application filed June 30, 1905. Serial No. 267,711.

To all whom it may concern:

Be it known that I, JACOB NIXON, a citizen of the United States, and a resident of Stockport, in the county of Van Buren and State of Iowa, have invented a new and useful Improvement in Ditching-Machines, of which the following is a specification.

The object of my invention is to provide certain improvements in the construction of certain parts of a ditching-machine whereby the cutting away of the earth and the removal thereof from the breast of the ditch is facilitated.

A practical embodiment of the invention is represented in the accompanying drawings, in which—

Figure 1 represents so much of a ditching-machine as will give a clear understanding of my invention, the parts being shown partially in side elevation and partially in section. Fig. 2 is a horizontal section taken in the plane of the line A A of Fig. 1 looking in the direction of the arrows. Fig. 3 is an enlarged view, in side elevation, of the screw conveyor, the cutting-shoe, the casing, and a portion of the screw conveyor being shown in section; and Fig. 4 is a horizontal section taken in the plane of the line B B of Fig. 3 looking in the direction of the arrows.

The sill of a suitable framework is denoted by 1, the lower portion of the framework being denoted by 2 and the upper portion thereof by 3. The shaft of the screw conveyor is denoted by 4, its upper portion having a sliding interlocked engagement with its driving gear-wheel 6—as, for instance, by making the upper portion of the shaft 4 of angular form in cross-section. A plurality of conveyor-sections 5 of the desired pitch to produce a rapid lifting of the earth from the ditch are secured to the shaft 4. In the present instance these conveyor-sections are cast in lengths of half the circumference of the shaft. The gear-wheel 6 is mounted in suitable bearings in the upper portion 3 of the framework and is driven from any suitable source of power (not shown herein)—as, for instance, through a vertical shaft 7, having a pinion 8 meshing with the wheel 6; and a bevel-gear 9, meshing with a bevel-gear 10 of said driving mechanism.

The upper end of the screw-conveyor shaft 4 is provided with a suitable device 11 for the attachment of the usual means for supporting a screw conveyor.

The bottom of the screw conveyor carries

a shoe 12, which shoe has a front cutting edge 13 for entering the breast of the ditch at the bottom thereof. An antifriction-bearing 14 is interposed between the conveyor and shoe for reducing friction at that point. As a convenient means for supporting the shoe 12 from the conveyor I extend the shaft 4 downwardly through the shoe and provide its lower end with a screw-threaded portion 15, which is engaged by the upper part 16 of the antifriction-bearing and also by a lock-nut 17, engaging the shoulder 18 of a recess 19 in the bottom of the shoe.

The screw conveyor has secured thereto a spiral cutting-blade 20, composed of a plurality of sections which preferably break joints with the conveyor-sections 5. Screws 21 may be used for securing the blade-sections to the conveyor-sections. This spiral cutting-blade is arranged to engage the breast of the ditch for removing the earth therefrom onto the conveyor-sections 5. A casing is provided for the conveyor, which casing comprises an upper cylindrical portion 22, a lower semicylindrical portion 23, and a vertically-adjustable front shield 24. The lower semicylindrical portion 23 of the casing incloses the back half of the conveyor, leaving its front half exposed for engaging the breast of the ditch. This lower-half section is of sufficient width to permit the conveyor to be lowered to excavate ditches of varying depths. The adjustable front shield 24 of the casing is so arranged that it will cover the front of the lower semicylindrical portion of the casing which extends above the surface of the ground. The means which I have shown for keeping the bottom of this shield on a level with the ground comprises a spring guide-bar 25, pivoted at 26 to the lower portion 22 of the framework and engaged with the shield 24. This spring guide-bar 25 rests at all times on the surface of the ground, and thus keeps the bottom of the shield at all times in proximity thereto.

A web 27 extends rearwardly from the screw-conveyor casing, the back of which web engages a vertical guide 28, extending between the upper and lower portions of the framework. This casing is secured at its bottom to the shoe 12. It will therefore be seen that the conveyor, the shoe, and the casing are all supported from the shaft 4 by the lock-nut 17.

By the use of the improvements hereinabove set forth I am enabled to produce a

ditching-machine in which any depth of ditch may be excavated and at the same time produce a closed cylindrical casing for that part of the conveyer which is above ground, thus insuring the removal of all of the earth from the ditch upwardly through the casing and from thence to any point desired. Furthermore, by providing the antifriction-bearing between the conveyer and the cutting-shoe I am enabled to materially reduce friction at this point, and thus procure a much more easily operated conveyer. Furthermore, by providing the sliding interlocked connection between the shaft and its driving-wheel I am enabled to use the conveyer in connection with ditches of varying depths without rearranging the driving mechanism. Again, by providing a spiral cutting-blade for the screw conveyer I am enabled to provide a conveyer with cutting-blades of various styles to suit different requirements and am enabled at any time to remove the cutting-blade and replace the same without being compelled to replace the entire conveyer, as has heretofore been necessary.

It is to be understood that the framework is moved forwardly in the usual manner to advance the conveyer to its work.

What I claim as my invention is—

1. In a ditching-machine, a suitable framework, a vertically-arranged screw conveyer, means for operating it and a spiral cutting-blade carried by the conveyer.

2. In a ditching-machine, a suitable framework, a vertically-arranged screw conveyer, means for operating it and a spiral cutting-blade composed of a plurality of sections secured to the conveyer.

3. In a ditching-machine, a suitable framework, a vertically-arranged screw conveyer, means for operating it and a spiral cutting-blade removably secured to the conveyer.

4. In a ditching-machine, a suitable framework, a vertically-arranged screw conveyer, means for operating it and a spiral cutting-blade composed of a plurality of sections removably secured to the conveyer.

5. In a ditching-machine, a suitable framework, a vertically-arranged screw conveyer, means for rotating it, a shoe carried by the conveyer and an antifriction-bearing between the conveyer and shoe.

6. In a ditching-machine, a suitable framework, a vertically-arranged screw conveyer, means for rotating it and a conveyer-casing comprising an upper cylindrical portion and a lower semicylindrical back portion.

7. In a ditching-machine, a suitable framework, a vertically-arranged screw conveyer, means for rotating it and a conveyer-casing comprising an upper cylindrical portion, a lower semicylindrical back portion and a vertically-adjustable front shield for that portion of the semicylindrical back portion which is above the surface of the ground.

8. In a ditching-machine, a suitable framework, a vertically-arranged screw conveyer, means for rotating it, a conveyer-casing comprising an upper cylindrical portion, a lower semicylindrical back portion, a vertically-adjustable front shield and means engaging the ground for maintaining the bottom of the front shield at all times in proximity to the ground.

9. In a ditching-machine, a suitable framework, a vertically-arranged screw conveyer, means for rotating it, a conveyer-casing comprising an upper cylindrical portion, a lower semicylindrical back portion, a vertically-adjustable front shield and a spring-arm carried by the framework and connected to the shield for maintaining the bottom of the shield in proximity to the ground.

10. In a ditching-machine, a suitable framework, a vertically-arranged screw conveyer, means for rotating it, a shoe provided with a front cutting edge and a casing for the conveyer, the said shoe and casing being carried by the conveyer.

11. In a ditching-machine, a suitable framework, a vertically-arranged screw conveyer, means for operating it, a shoe, an antifriction-bearing between the conveyer and shoe and a conveyer-casing, the said shoe and casing being carried by the conveyer.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 27th day of June, 1905.

JACOB NIXON.

Witnesses:

W. H. BREWER,
F. A. PARNITZKE.