B. M. ROLPH.

DITCHING MACHINE.

APPLICATION FILED JULY 29, 1908.

918,373.

Patented Apr. 13, 1909.

2 SHEETS—SHEET 1.

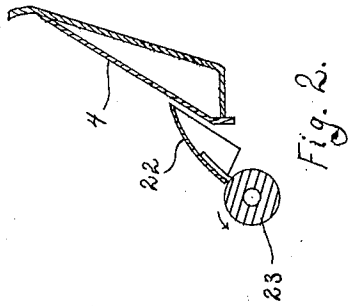


Fig. 2.

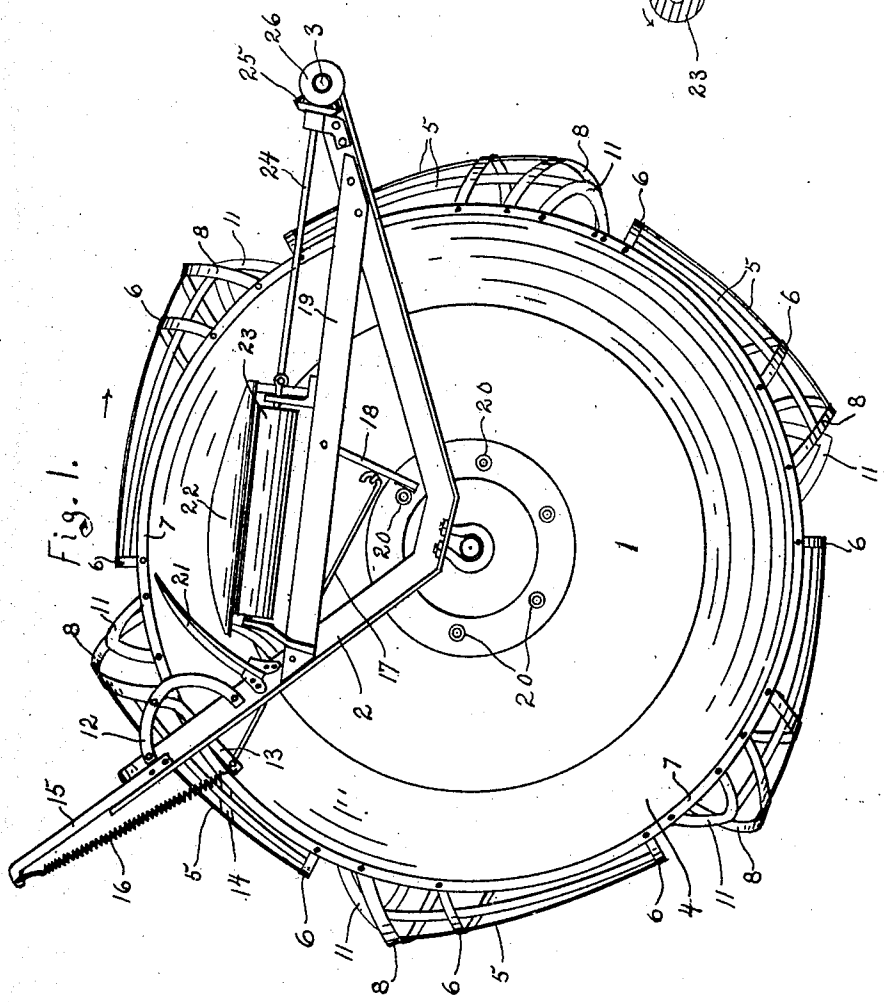


Fig. 1.

Inventor

Benjamin M. Rolph,

By Walter N. Haskell,

his Attorney.

Witnesses

R. W. Mitchell

L. L. Weaver

THE NORRIS PETERS CO., WASHINGTON, D. C.

B. M. ROLPH.

DITCHING MACHINE.

APPLICATION FILED JULY 29, 1908.

918,373.

Patented Apr. 13, 1909.

2 SHEETS—SHEET 2.

Fig. 5.

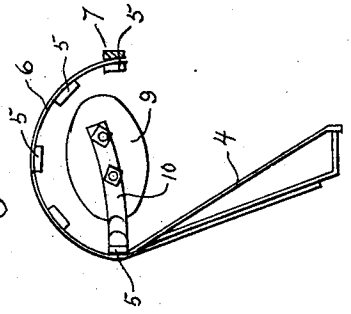


Fig. 6.

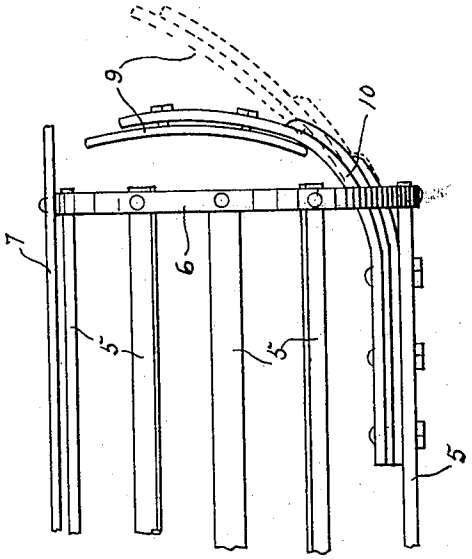
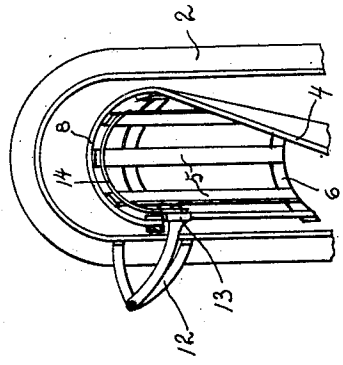


Fig. 4.



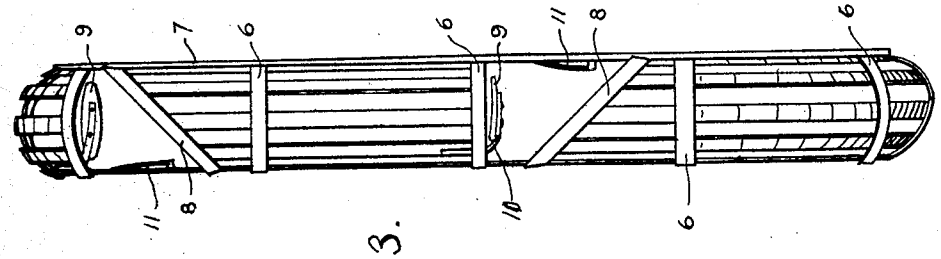


Fig. 3.

Inventor

Benjamin M. Rolph,

By Walter N. Haskell,

his Attorney.

Witnesses

G. W. Mitchell

D. L. Weaver

THE NORRIS PETERS CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

BENJAMIN M. ROLPH, OF FRANKLIN GROVE, ILLINOIS.

DITCHING-MACHINE.

No. 918,373. Specification of Letters Patent. Patented April 13, 1909.

Application filed July 29, 1908. Serial No. 445,958.

To all whom it may concern:

Be it known that I, BENJAMIN M. ROLPH, a citizen of the United States, residing at Franklin Grove, in the county of Lee and State of Illinois, have invented certain new and useful Improvements in Ditching-Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention has reference to ditching machines, and pertains to certain improvements on a machine of that class upon which Letters Patent No. 887,129 were issued to me, bearing date the twelfth day of May, 1908. As the improvements involved in the present application have reference chiefly to the central ditching wheel and parts appurtenant thereto, only such parts are shown in the drawings and will be referred to in the following specification.

In the drawings: Figure 1 is a side elevation of the ditching wheel and supporting arch therefor. Fig. 2 is a sectional detail showing the relative positions of the shield 22 and roller 23. Fig. 3 is a plan view of the ditching wheel, detached. Fig. 4 is a detail, showing the manner of supporting the knife 14. Fig. 5 is a rear end view of one of the scoops. Fig. 6 shows the same, in plan.

Similar numbers refer to similar parts throughout the several figures.

1 represents the ditching wheel, rotatably mounted in the arch 2, pivotally supported on a shaft 3, suitably mounted in the machine. The outer part of the wheel consists of a dish-shaped flange 4, on which is supported a plurality of scoops, each formed of spaced-apart bars or rods 5, united by bands 6, which are secured at one side to the flange 4. At the opposite side they are attached to a ring 7. Each scoop is provided at its forward end with a diagonal knife 8, the knives on the several scoops being alternately disposed in opposite directions. The width of the knives is a little greater than that of the scoops, enabling the scoops to move freely in the opening cut by the knives. The distance from the center of the wheel to the top of the scoop is gradually decreased toward the rear end of the scoop, whereby the earth becomes more firmly packed in the scoop until it is desired to discharge the same therefrom. This is further aided by means of gates 9, supported at the rear ends of the scoops by spring shanks 10, fixed to the lower bar 5 on the inner side of the scoops. The gates 9 are capable of resisting an ordinary amount of pressure from within the scoop, but if a stone or other heavy obstacle comes in contact with one of the gates, such gate springs outwardly, as shown in dotted lines in Fig. 6, permitting the obstacle to pass from the scoop, whereupon the gate returns to its former position.

Knives 11 are alternately supported on the wheel 1 and ring 7, in front of the short sides of the scoops, such knives aiding in cutting through the surface of the ground.

Fixed to one side of the arch 2 is a frame 12, to which is pivoted a bar 13, to the free end of which is fixed a semi-circular cutting knife 14, adapted to pass through the scoops in proximity to the inner faces of the bars 5. Secured to the arch 2 is an arm 15, to the upper end of which is attached a contractile coiled spring 16, the other end of such spring being secured to the free end of the bar 13. A rod 17 is also secured at its upper end to the bar 13, and at its lower end to an arm 18, pivoted to a bar 19 fixed to the arch 2. On the face of the wheel 1 is supported an annular series of rollers 20, adapted to engage the end of the arm 18 in the rotation of the wheel, and draw the arm 18 downwardly until the roller passes the end thereof. This movement also tends to draw the bar 13 and knife 14 downwardly, the rollers 20 equaling in number the scoops on the wheel, and being so disposed that the knife 14 will be drawn gradually downward in its passage through the scoop. By this means friction between the knife 14 and bars of the scoop is avoided. Upon the knife leaving the scoop at the rear end the arm 18 is released from engagement with the roller, and the spring 16 causes the return of the bar 13 upwardly to its normal position, with the knife 14 in position to enter the next succeeding scoop.

Fixed to the arch 2 is a knife 21, which is projected outwardly along the face of the flange 4, and aids in cleaning the earth from such flange.

22 is a shield, supported in proximity to the face of the flange 4, and adapted to receive the earth therefrom and convey it out-

wardly to a roller 23, supported on the bar 19. The roller is rotated in a direction to carry the earth farther away from the face of the wheel 1, by means of a shaft 24, actuated from the shaft 3 by means of gear-wheels 25 and 26. By this means the dirt is prevented from falling back into the ditch formed by the operation of the wheel.

What I claim as my invention, and desire to secure by Letters Patent of the United States, is:

1. In a device of the class named, a rotary ditching wheel; a plurality of scoops, supported on the edge of said wheel, and formed of spaced-apart bars; diagonal cutting knives, at the forward ends of said scoop, alternately disposed; and spring-controlled gates at the rear ends of said scoops, substantially as shown and described.

2. In a device of the class named, an arch, pivotally mounted in the machine; a ditching-wheel, rotatably supported therein; a series of scoops, supported on the edge of said wheel, and formed of spaced-apart bars, the depth of such scoops gradually decreasing toward the rear ends thereof; a semi-circular knife, adapted to pass through said scoops, upon the rotation of said wheel, and means for drawing said knife gradually inward upon its passage through the scoop, substantially as shown and set forth.

3. In a device of the class named, a wheel, rotatably mounted therein, and provided with a dish-shaped flange at its outer edge, a series of scoops, fixed on the outer edge of said flange, and provided with diagonal cutting means, alternately disposed; spring-controlled gates, at the rear ends of said scoops; means for disengaging the earth from said scoops, at a desired point in the rotation of said wheel; and means for conveying said earth outwardly from the wheel after being dis-engaged, substantially as described.

4. In a device of the class named, a rotary ditching wheel, supported therein; a plurality of scoops, supported on the edge of said wheel, the depth of such scoops gradually decreasing toward the rear ends thereof; a cleaning knife, adapted to pass along the inner faces of said scoops, upon the rotation of said wheel; an annular series of rollers, supported on the face of said wheel; a swingingly supported arm, engaged by said rollers; means for imparting the movement of said arm to said cleaning knife, to gradually draw the same inward upon its progress through a scoop; and means for returning said knife to its former position, substantially as and for the purpose mentioned.

5. In a device of the class named, a ditching wheel, rotatably mounted therein, and provided at its outer edge with a dish-shaped flange; a plurality of scoops, supported on the outer edge of said flange, and formed of spaced-apart bars; cutting means at the front ends of said scoops; spring-controlled gates at the rear ends of said scoops; means for cleaning said scoops at a desired point in the rotation of said wheel; a shield, in proximity to said flange, and adapted to receive the earth therefrom; and a roller, adjacent to said shield, and adapted to receive the earth therefrom, and convey it outwardly, substantially as described.

6. In a device of the class named, a rotary ditching wheel, mounted therein; a plurality of scoops, supported on the outer edge of said wheel, and formed of spaced-apart bars; diagonal cutting knives, diagonally disposed in opposite directions, at the forward ends of said scoops; independent cutting knives, supported on said wheel, in front of said scoops; means for automatically cleaning the earth from said scoops, at a desired point in the rotation of said wheel; and means for moving said earth outwardly from said wheel, substantially as set forth.

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

BENJAMIN M. ROLPH.

Witnesses:
WALTER N. HASKELL,
SEAVEY A. MOELLER.