No. 677,000. Patented June 25, 1901.

P. J. STEPHENS.

DITCHING MACHINE.

(Application filed Mar. 21, 1901.)

(No Model.) 2 Sheets—Sheet 1.

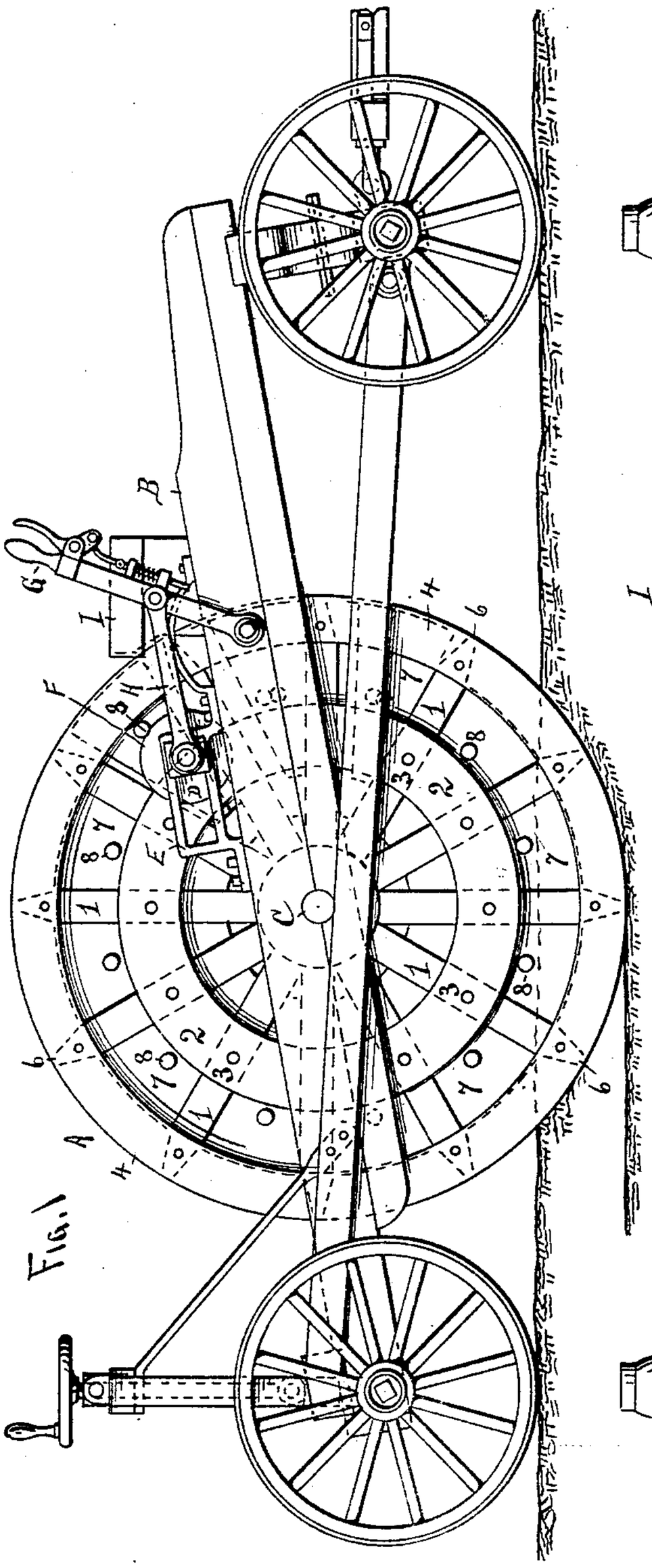

FIG. 1.

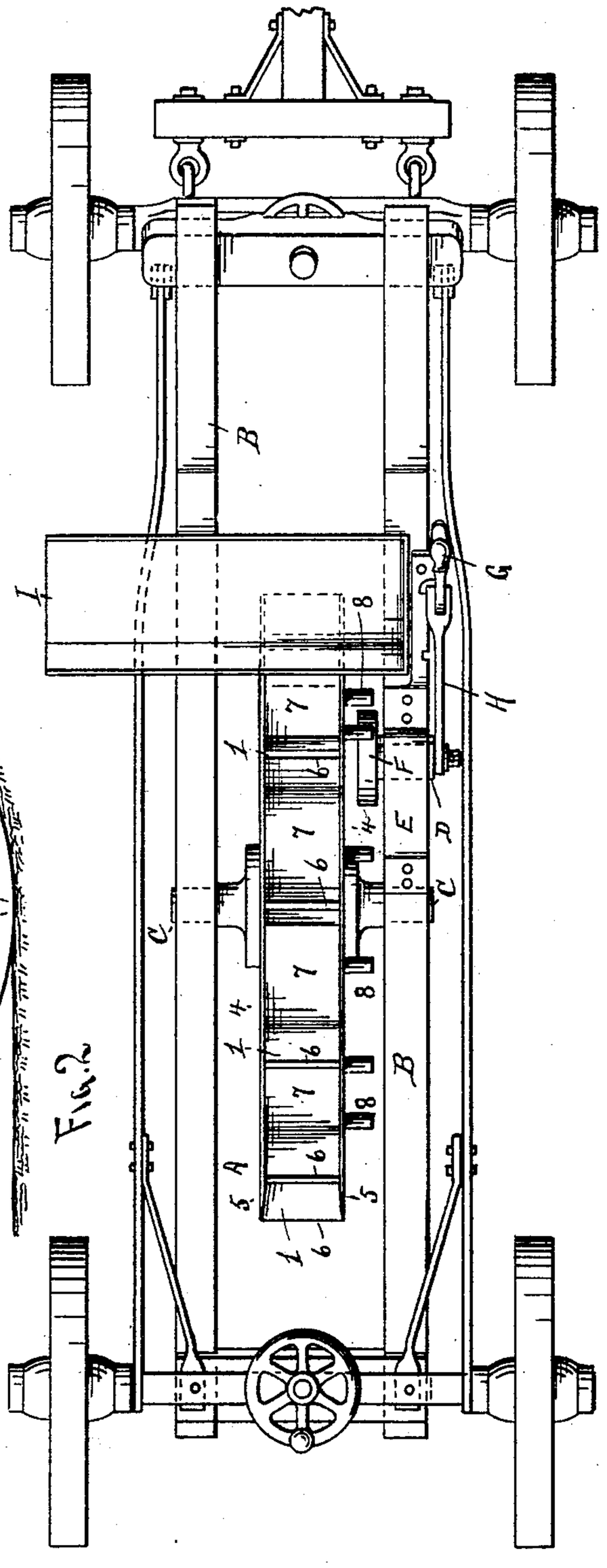

FIG. 2.

Witnesses
C. M. Woodward.
J. C. Garner

Inventor
PATRICK J. STEPHENS.
By Church & Co.
Attorneys

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2 Sheets—Sheet 2.

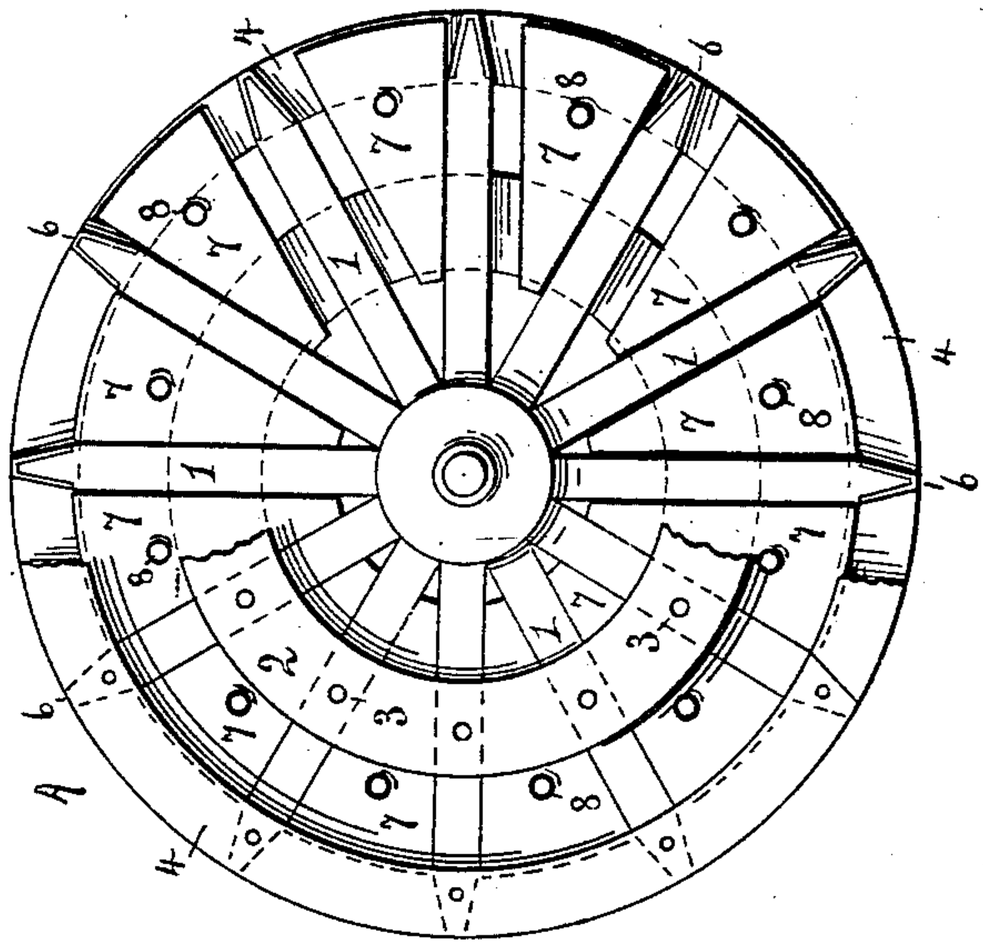

FIG. 5

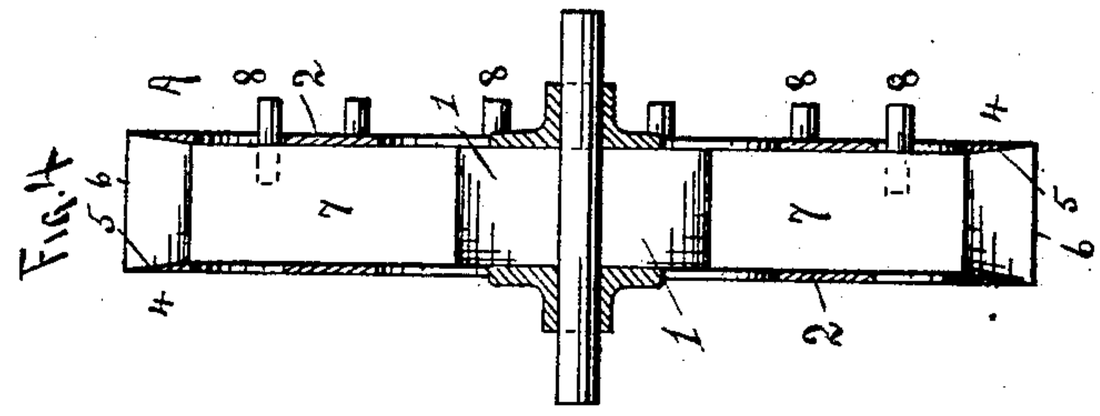

FIG. 4

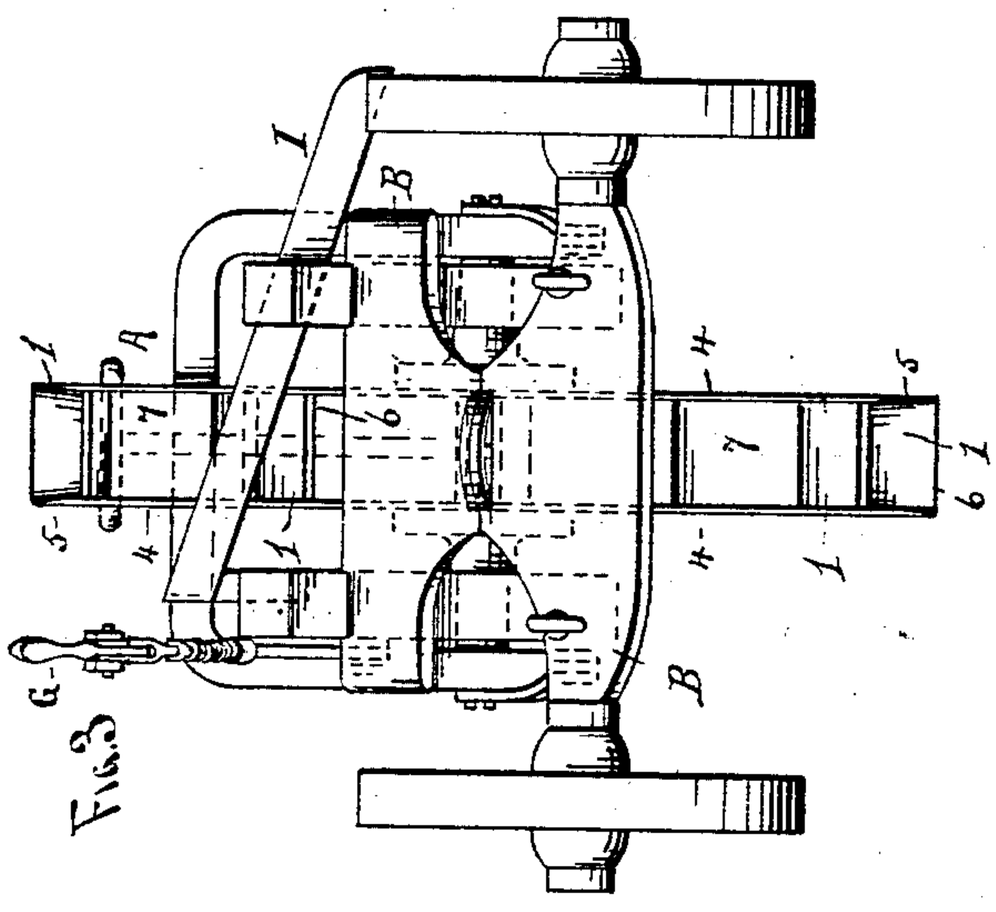

FIG. 3

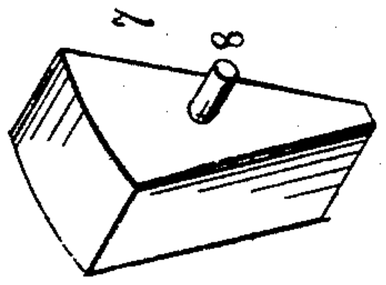

FIG. 6

Witnesses
C. H. Woodward.
J. W. Gurner

PATRICK J. STEPHENS, Inventor
By Cushman & Co.
Attorneys

UNITED STATES PATENT OFFICE.

PATRICK JESSE STEPHENS, OF FLORAL, KENTUCKY.

DITCHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 677,000, dated June 25, 1901.

Application filed March 21, 1901. Serial No. 52,229. (No model.)

To all whom it may concern:

Be it known that I, PATRICK JESSE STEPHENS, a citizen of the United States, residing at Floral, in the county of Hancock and State of Kentucky, have invented a new and useful Ditching-Machine, of which the following is a specification.

My invention is an improved ditching-wheel adapted for use in ditching, grading, and similar purposes; and it consists in the peculiar construction and combination of devices hereinafter fully set forth and claimed.

In the accompanying drawings, Figure 1 is a side elevation of a ditching-machine provided with my improved ditching-wheel and coöperating mechanism for actuating the followers thereof. Fig. 2 is a top plan view of the same. Fig. 3 is a front elevation of the same. Fig. 4 is a vertical central sectional view of my improved ditching-wheel. Fig. 5 is partly a side elevation and partly an interior elevation of the same with the near peripheral cutting-head and annular plate removed. Fig. 6 is a detail perspective view of one of the followers.

In the embodiment of my invention here shown the spokes 1 of the ditching-wheel A are connected on opposite sides at points about midway between the inner and outer ends of the spokes by annular plates 2, which are bolted or otherwise secured to the spokes, as at 3. On the sides of the spokes at the outer ends thereof are bolted or otherwise secured peripheral cutting-heads 4, which are concentric with the annular plates 2 and the outer edges of which are sharpened and adapted to cut into the soil under the wheel as the same rolls forward. The said peripheral cutting-heads are beveled on their inner sides, as at 5. The outer ends of the spokes may be formed into or provided with cutters, as at 6. In practice I prefer to make the spokes of iron and to form the cutters 6 of steel and to make said cutters detachable from said spokes, whereby they may be readily removed therefrom to be sharpened or to be replaced by new ones when they become worn or dulled. The said cutters 6, which are radial, are transversely disposed between the peripheral cutting-heads. Between the spokes and the annular plates 2 are segmental radially-movable followers 7, which are blocks of any suitable material and of the shape here shown. The said followers are provided with operating-pins 8, which project from opposite sides thereof and play between the annular plates 2 and peripheral cutting-heads 4 and serve to retain the followers in place while admitting of the radial movement of the followers.

In Figs. 1, 2, and 3 of the drawings I show a ditching-machine the framework and means for raising and lowering the same of which are of the usual construction and in the frame B of which the ditching-wheel A has its bearings, as at C. On the frame B, in movable blocks D, which, as here shown, operate in guides E, are journaled cam-wheels F. A hand-lever G is connected to the blocks D by links H or other suitable devices, and the said cam-wheel may be moved into or out of the paths of the operating-pins 8 of followers 7. Any suitable means may be employed for moving the cam-wheels into or out of the paths of the operating-pins, and I do not limit myself in this particular; nor do I limit myself to the use of cam-wheels, as any other suitable means may be employed in lieu thereof. The cam-wheels when in operative position with relation to the ditching-wheel are in front of and above the axle of the ditching-wheel, and hence as each of the followers by the rotation of the ditching-wheel reaches a point on the upper side of the wheel in advance of the center thereof its operating-pins are engaged by the cam-wheels and caused by them to move the follower-block radially outward in the wheel, thereby discharging the mass of earth lodged on the said follower, at the outer end thereof, between transverse cutters and the peripheral cutting-heads. As the earth falls from the said follower it is caught by a suitable spout I and discharged to one side of the machine.

It will be understood that as the ditching-wheel rotates its lower side, owing to the peripheral cutting-heads and the transversely-disposed radial cutters between them, sinks into the soil and the same becomes lodged in the peripheral spaces on the wheel formed by the followers, the peripheral cutting-heads, and the radial cutters. Owing to the beveled inner sides of the peripheral cutting-heads and the beveled opposing sides of the radial cutters the soil is compressed and retained by

the wheel and carried upward thereby as the same rotates and is finally discharged from the upper side thereof, as hereinbefore stated.

My improved ditching-wheel may be employed not only for ditching and grading purposes, but may be also used for digging potatoes and other root crops, for preparing soil for cultivation, and for subsoiling.

The spout I herein shown is a simple form of conveyer for carrying the material excavated and discharged by the ditching-wheel. I do not limit myself to the use of this spout I in combination with the ditching-wheel, as any preferred form of conveyer may be substituted for the spout without departing from the spirit of my invention.

Having thus described my invention, I claim—

1. A ditching-wheel having peripheral cutting-heads, transverse cutters between them and radially-movable followers between said heads and cutters, in combination with means to operate said followers, substantially as described.

2. A ditching-wheel having peripheral circumferential cutting-heads, and radially-movable followers between them, in combination with means to operate said followers, substantially as described.

3. A ditching-wheel having peripheral cutting-heads, radially-disposed cutters between said cutting-heads and radially-movable followers between said heads and cutters, in combination with means to operate said followers, substantially as described.

4. A ditching-machine having a ditching-wheel provided with peripheral cutting-heads and radially-movable followers, the latter having operating-pins, in combination with tappets carried by said ditching-machine, and means to move said tappets into and out of the path of said operating-pins, substantially as described.

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

PATRICK JESSE STEPHENS.

Witnesses:

WM. S. GIVENS,

B. F. ELLIOTT.