C. HORIX.

DITCHING MACHINE.

APPLICATION FILED SEPT. 7, 1911.

1,064,733.

Patented June 17, 1913.

2 SHEETS—SHEET 1.

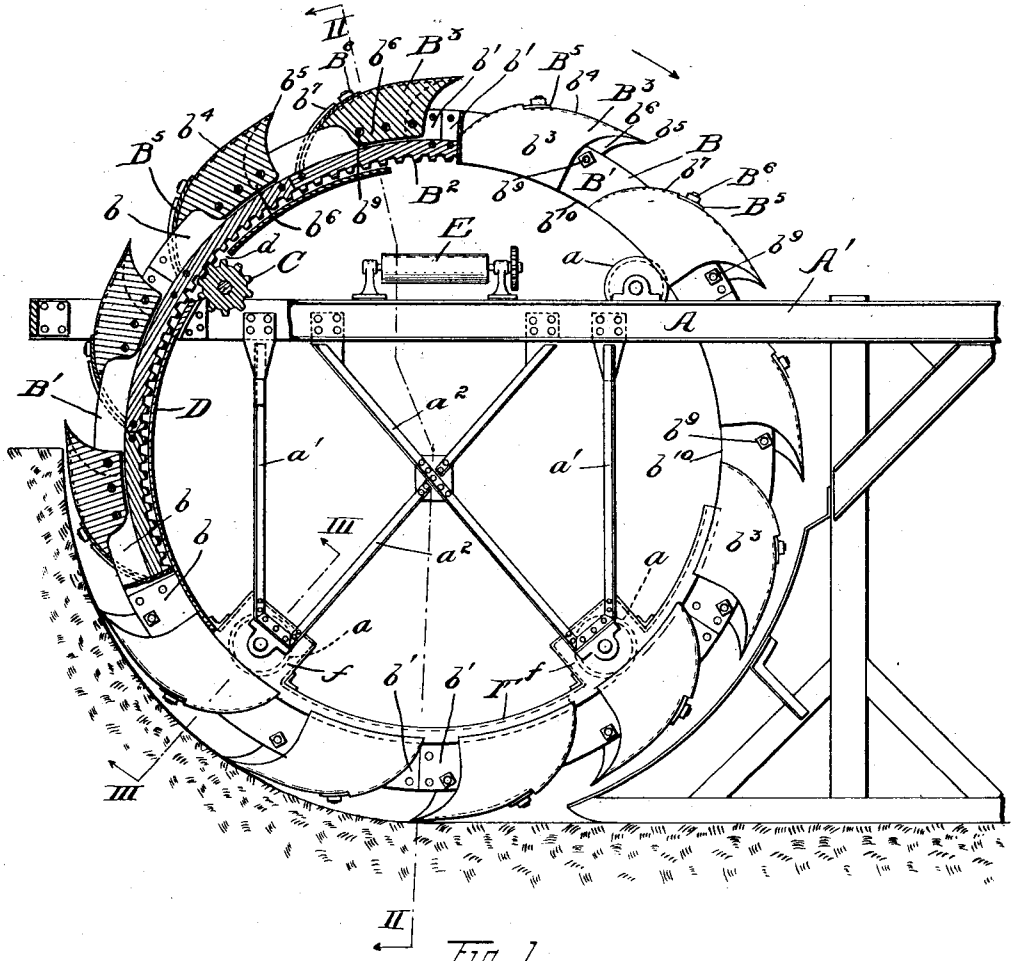

Fig. 1.

Witnesses

Herman Esch

Winifred Fleming.

Inventor:

Carl Horix

by A. E. Merkel,

his Attorney

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

C. HORIX.

DITCHING MACHINE.

APPLICATION FILED SEPT. 7, 1911.

1,064,733.

Patented June 17, 1913.

2 SHEETS—SHEET 2.

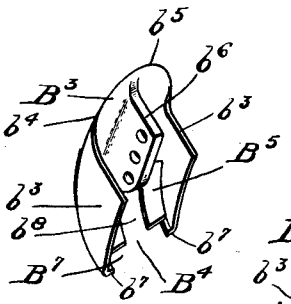

Fig. 4.

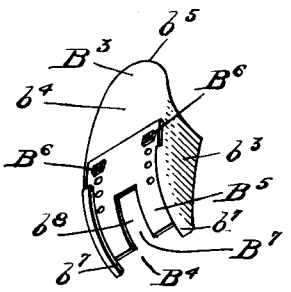

Fig. 5.

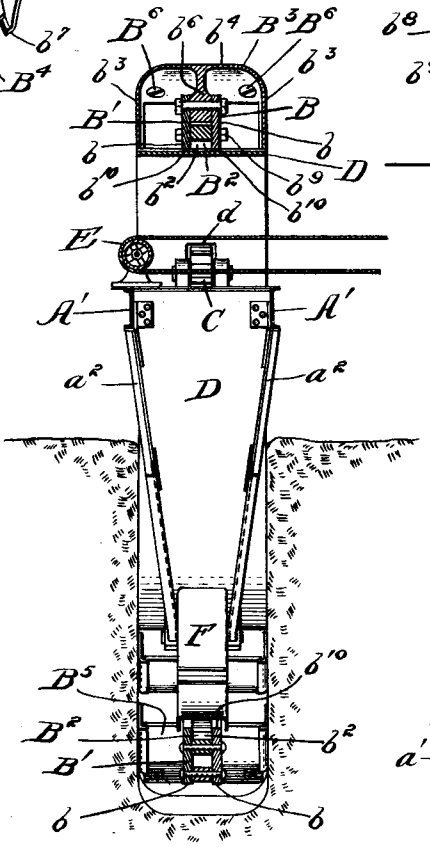

Fig. 2.

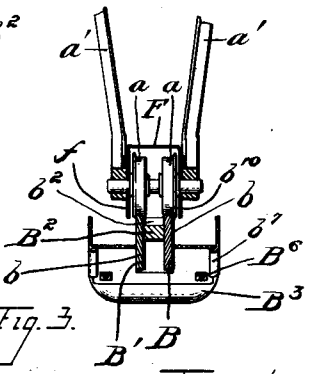

Fig. 3.

Witnesses

Herman Eisele

Winifred Fleming.

Inventor:

Carl Horix

by A. E. Merkel,

his Attorney

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

CARL HORIX, OF TOLEDO, OHIO.

DITCHING-MACHINE.

1,064,733. Specification of Letters Patent. Patented June 17, 1913.

Application filed September 7, 1911. Serial No. 648,146.

To all whom it may concern:

Be it known that I, CARL HORIX, a citizen of the United States, resident of Toledo, county of Lucas, and State of Ohio, have invented a new and useful Improvement in Ditching-Machines, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

My invention relates to ditching-machines, and particularly to that class of ditching-machines shown, described and claimed in Patent No. 523,790, issued July 31, 1894, to James B. Hill.

The object of my invention is to provide a machine of this character which will be economical in its construction and efficient in its operation.

The said invention consists of means hereinafter fully described and particularly set forth in the claims.

The annexed drawings and the following description set forth in detail certain means embodying my invention, the disclosed means, however, constituting but one of various mechanical forms in which the principle of my invention may be applied.

In said annexed drawings:—Figure 1 is a side-elevation, partially in vertical longitudinal section, of a ditching-wheel and the supporting frame therefor, embodying my invention. Fig. 2 is a transverse section taken upon the plane indicated by lines II—II in Fig. 1. Fig. 3 is a fragmentary section taken upon the plane indicated by line III—III in Fig. 1. Figs. 4 and 5 are perspective views of one of the scoops, detached.

The general structure of the ditching-machine embodying my invention is similar to that shown, described and claimed in the above-named patent.

In the embodiment of my invention as illustrated by the drawing, A represents the supporting frame for an open-center ditching wheel, which is capable, as in the above-named patented device, of being raised and lowered, as will be readily understood. Upon this frame are mounted, in the usual manner, three pairs of anti-friction journal rollers a a a, the supports for the lower two pairs of rollers consisting of angle-bars a' a^2 suitably secured to the upper main frame-member A′ by means of gusset-plates and depending therefrom.

The ditching-wheel proper, B, consists of three main elements:—an annular ring-portion B′; an internal gear-member B^2; and the scoops B^3. The ring-portion B′ consists of two parallel annular rings b b, each of which is built up of a plurality of abutting segmental plates b'. Secured between the inner portion of these rings is the internal gear-member B^2, which consists of a plurality of segmental abutting gear-portions b^2 which are secured between the plates b' by means of suitable bolts or rivets. This gear-member, therefore, forms a separator for the rings b of the ring-portion B′ of the wheel. The segments b^2 are set inwardly from the inner edges of rings b a distance sufficient to permit such rings to laterally house or shroud the teeth of the gear-member, as shown in Figs. 2 and 3. Each of the scoops B^3 is provided with the lateral or side portions b^3 b^3, the outer or bottom portion b^4, and the digging-lip b^5. Projecting inwardly from the bottom or end-portion b^4, preferably integral therewith and substantially perpendicular to the end or bottom portion b^4, is a centrally located lug b^6. The back of the scoop is formed with an opening B^4 which is covered by a plate B^5 slidably mounted on the main body of the scoop and securable by means of bolts and nuts B^6 and flanges b^7 formed in the sides of the scoop, as shown in Figs. 4 and 5. By providing a plurality of holes in the plate B^5 for the bolts, such plates may be adjusted to assume various positions and form an opening B^7 of various heights on the back of the scoop. In the adjustable plate B^5 is cut an incision b^8. These scoops are mounted on the ring-portion, the lug b^6 being placed in the annular space between the outer portion of the rings b and secured therebetween by means of bolts b^9, the incision b^8 being provided to permit of the passage of the ring-portion of the wheel through the rear end of the scoops, as will be readily understood.

The inner cylindrical surfaces b^{10} b^{10} of the rings b b form the bearing of the ditching-wheel and rest upon the rollers a a, the latter being each provided with one flange externally located for retaining them in position, as will be readily understood, and as clearly shown in Fig. 3.

A driving pinion C is mounted upon the frame, engages the internal gear-member B^2, and is hence adapted to rotate the ditching-wheel.

Immediately adjacent to the gear-member B^2 is the usual fixed curved retaining plate D which extends from a point near that at which the scoops begin to rise, to a point near the top of the structure and immediately above the transverse conveyer E. The width of this plate D is substantially equal to that of the scoops; and the sides of the latter extend into close proximity thereto, as shown in Fig. 2. A suitable aperture *d*, Fig. 2, is made in the plate D, for permitting the pinion C to pass therethrough, in order to engage the gear-member B^2.

Covering the lower central internal portion is a protecting apron or guard F, of segmental form, as shown in Fig. 1. This apron is curved to form, in conjunction with side-plates *f f*, a housing for the lower rollers *a a*, which has the bars *a' a'* riveted thereto. Said bars, therefore, form the support for said housing, and hence for the apron F. The rollers are mounted in bearings riveted to said side-plates. This apron is of U-shaped cross-section, having the cross-member thereof on top, as shown in Fig. 3.

In operation, the ditching-wheel rotates in the direction indicated by the arrow, and in so doing the earth is scooped up by the scoops B^3 and carried upwardly thereby, discharge from the scoops being prevented by the plate D, until the end of the latter is reached. The scoops' contents on reaching this point are, in the usual manner, discharged upon the transverse conveyer E, from whence they are laterally conveyed and thus removed from the apparatus. The apron F intercepts any material which may drop from the conveyer E or from the scoops prior to their discharge of their contents, upon the lower inner portion of the ditching-wheel, and hence protects the internal gear-member B^2 by preventing the earth from becoming deposited between its teeth, with the consequent deleterious results.

By constructing the scoops and securing them in the manner above described, it will be seen that they are readily removable, and may be with facility replaced by scoops of different width or shape, for the purpose of digging ditches of different width or other dimension, without disturbing or dismounting any portion of the mechanism other than the plate D.

In constructing my improved device, I prefer to arrange the segmental plates *b'* forming the ring *b*, and the segmental portions b^2 of the gear-member, so as to break joints, as shown in Fig. 1, thereby contributing to the general strength of the structure.

For digging in some kinds of soil, the opening B^7 is required, and it is necessary to change the size of this opening for soils of different character. For instance, it is found to be advantageous to increase the size of said opening when operating in wet and sticky soils, over those sufficient for dry soils. The adjustable plate B^5 is provided for this purpose.

Having fully described my invention, what I claim and desire to secure by Letters Patent is:—

1. In a ditching-machine, an open-center ditching-wheel comprising the combination of an annular ring-portion provided with two side-members; an internal gear-member secured between said side-members; and a plurality of outwardly projecting scoops also secured between the latter.

2. In a ditching-machine, a ditching-wheel comprising the combination of an annular member consisting of a plurality of plates forming two oppositely disposed annular rings; an internal gear-member secured between said two rings; and a plurality of outwardly projecting scoops secured between said rings.

3. In an open center ditching-wheel, the combination with an annular ring-portion comprising in its structure two side-members; of a plurality of outwardly projecting scoops each having an internal inwardly projecting portion extending transversely with relation to the wheel's axis seated and secured between said side-members.

4. In an open center ditching-wheel, the combination with an annular ring-portion comprising in its structure two side-members; of a plurality of outwardly projecting scoops each having an internal inwardly projecting portion extending transversely with relation to the wheel's axis seated and removably secured between said side-members.

Signed by me, this 29th day of August, 1911.

CARL HORIX.

Witnesses:
H. F. SHUNCK,
E. MCDANIEL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents. Washington, D. C."