T. F. STROUD.

GRADING AND DITCHING MACHINE.

APPLICATION FILED MAY 23, 1910.

975,176. Patented Nov. 8, 1910.

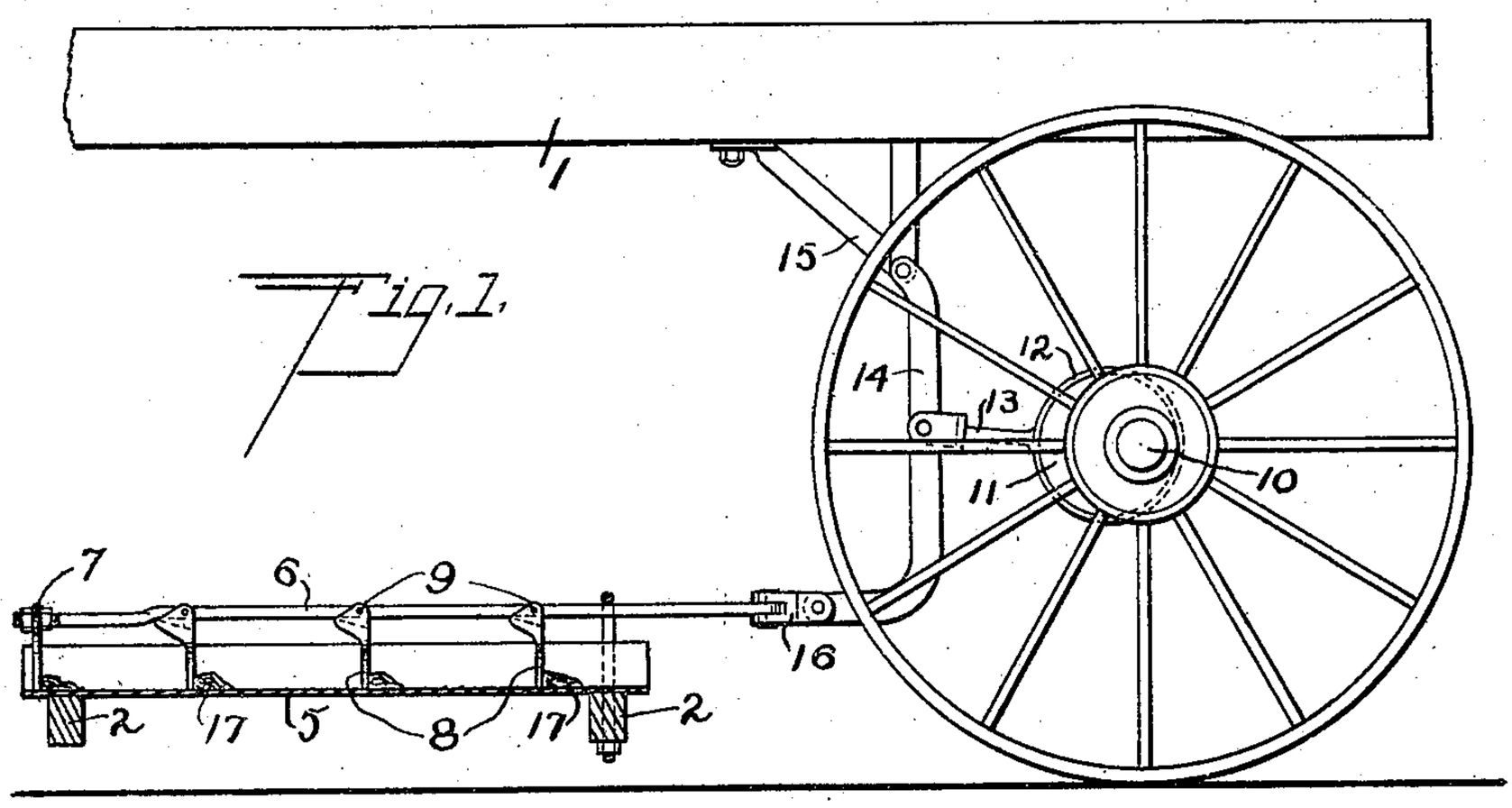

Fig. 1.

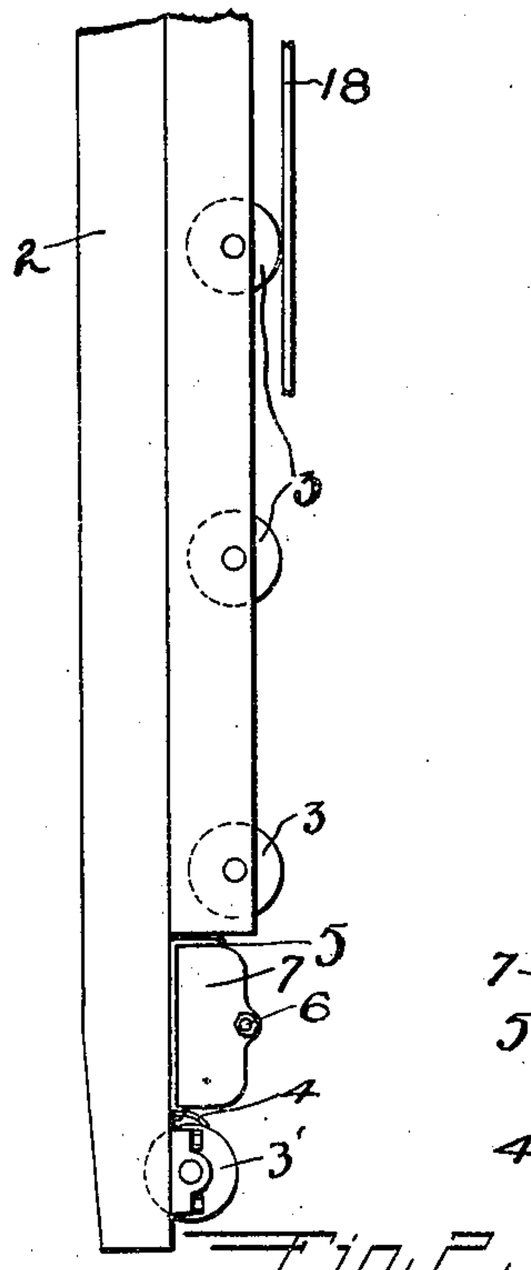

Fig. 2.

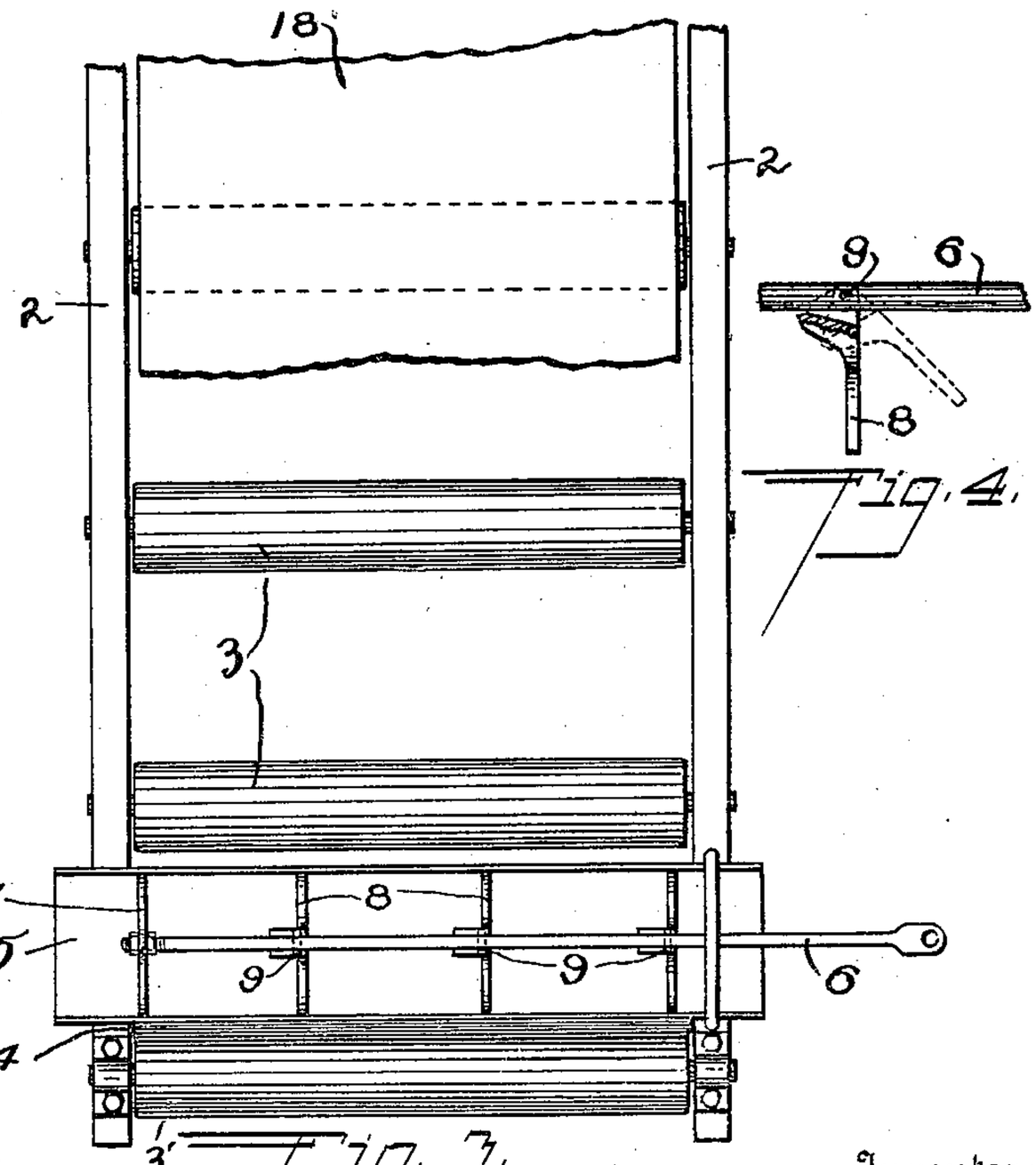

Fig. 3.

Fig. 4.

Witnesses:

Roy G. Kratz,

Mary Earl.

Inventor,

Thomas F. Stroud,

By Willard Eddy,

Attorney

UNITED STATES PATENT OFFICE.

THOMAS F. STROUD, OF OMAHA, NEBRASKA.

GRADING AND DITCHING MACHINE.

975,176. Specification of Letters Patent. Patented Nov. 8, 1910.

Application filed May 23, 1910. Serial No. 562,933.

To all whom it may concern:

Be it known that I, THOMAS F. STROUD, of the city of Omaha, county of Douglas, and State of Nebraska, have invented certain new and useful Improvements in Grading and Ditching Machines, which improvements are described in the following specification and are illustrated by the accompanying drawings.

My invention relates in general to that class of grading and ditching machines in which the soil which is stirred by the plow or digger, is received upon an elevating conveyer, comprising a series of rollers, an endless belt thereon, a scraper, for freeing one of such rollers or such endless belt from adhering soil, and a dirt pan, which is arranged between the leaves of such belt in position to receive the soil from such scraper; the same relates in particular to means of removing from between the leaves of such belt the scrapings which are so received by such pan.

It is the object of my invention to effect the removal of such scrapings in a superior manner, and automatically. To accomplish this object I use as parts of my improved machine a novel pan-cleaner, which comprises a number of separately hinged and uniformly reciprocating scraper-plates, which are actuated from an axle of the machine, and which work in different parts of the cleaner-pan respectively.

The best manner in which I have contemplated applying the principles of my invention, is illustrated in said drawings; in which—

Figure 1 is a partial side elevation of an elevating grading or ditching machine, which is constructed in accordance with these principles; the same figure includes a side elevation of the pan-cleaning mechanism. Fig. 2 is a side view of said pan-cleaning mechanism, together with certain co-acting parts of said machine. Fig. 3 is a plan view of the same. Fig. 4 is a detail, showing one of the hinged scraper-plates and its connection.

In these figures the numeral 1 denotes the frame of the machine; while 2 denotes the frame of the elevating conveyer. The latter comprises a number of horizontal rollers, 3 and 3′, and an endless belt 18, which is adapted to carry dirt from a plow or digger at one side of the machine to a point of discharge at the other side of the machine in the usual manner.

The numeral 4 denotes a stationary scraper, which is a thin metallic plate, mounted upon frame 2, and located with one of its longer edges in scraping contact with the periphery of roller 3′ in the usual manner, as shown in Fig. 2. A substitute scraper, if so preferred, can be fixed in scraping contact with the under surface of the upper leaf of said endless belt. The dirt-pan 5, like scraper 4, is mounted on frame 2, and occupies a position contiguous to that scraper, between the leaves of said belt. It is a shallow trough, open at both ends, and uniform in cross-section; and is adapted to catch the soil which is scraped from roller 3′, or from said belt, all in a well-known manner.

The pan-cleaner, which constitutes the nucleus of my invention, comprises a reciprocating horizontal rod 6 and an indefinite number of metallic scraper-plates, 7 and 8. The latter are attached to that rod at uniform distances apart, equal to or slightly exceeding the length of its stroke. The terminal scraper-plate 7 is fastened to rod 6 rigidly and at right angles thereto; while the scraper-plates 8 are attached to the same rod by hinges or pivots 9, and can swing from a vertical position backward, but not forward, toward a horizontal position, as shown in Fig. 4. All these scraper-plates fit loosely and crosswise into dirt-pan 5, as shown. The reciprocable rod 6, whose free end is supported by the scraper-plate 7, is actuated from the rear axle by means of an eccentric 11, which is mounted on that axle, a strap 12, which surrounds that eccentric, a connecting rod 13, which is joined to that strap, a bent lever 14, which is pivotally connected with rod 13 and with a bracket 15 on frame 1, and is attached to rod 6 by a flexible joint 16, as shown in Fig. 1.

In the operation of the invention, the plates 7 and 8, when pulled by the backward stroke of rod 6, scrape and pull along in the same direction the dirt which has accumulated behind them in pan 5, and form the same into a number of crosswise hillocks of dirt, 17, resembling windrows and piled up in the bottom of the pan at uniform distances apart. Upon the return, or forward stroke, of rod 6, the fixed plate 7 pushes out at the forward end of pan 5 the dirt which

has in like manner accumulated before it; while the hinged plates 8, riding over the hillocks 17, without moving them, fall into vertical positions just forward of those hillocks respectively, as shown in Fig. 1. Upon each subsequent backward movement of rod 6, the said hillocks of dirt are scraped and pulled along a short distance in the same direction by the same plates 8 respectively. In this manner, all the dirt which accumulates in pan 5, is expelled at the ends thereof, and falls to the ground outside the endless belt, part of the same being pushed out at the forward end of that pan at the fixed scraper-plate 7, and part being drawn along by steps intermittently toward the back end of the pan by the hinged scraper-plates 8. In this way, and with a minimum throw of the eccentric, the dirt-pan is continually being scraped and emptied while the machine works.

I claim as my invention—

1. In a grading or ditching machine, an elevating conveyer, which receives soil from a plow or digger; a scraper for freeing the lower roller of said elevating conveyer from adhering soil; and a dirt-pan, which is adapted to receive soil from said scraper; in combination with a pan-cleaner, comprising a reciprocating rod, which is connected with the rear wheel-axle of the machine, a number of hinged scraper-plates, which are carried by said reciprocating rod, and are adapted to work in said pan, and a terminal scraper-plate, which is rigidly attached to said reciprocating rod, and is adapted to guide and support the free end of said rod, and at the same time to scrape said dirt-pan alternately in opposite directions.

2. In a grading or ditching machine, an elevating conveyer, which receives soil from a plow or digger; a scraper for freeing said elevating conveyer from adhering soil; a dirt-pan for receiving soil from said scraper; and a pan-cleaner, comprising a number of hinged scraper-plates and a rigid scraper-plate, which are attached to a reciprocating rod, and are worked in said dirt-pan by said rod; in combination with an eccentric and eccentric strap, which are carried by the rear axle of the machine; and an operative connection, including a flexible joint, between said eccentric strap and said reciprocating rod.

3. In a grading or ditching machine of the described class, a dirt-pan, which is located between the leaves of the conveyer belt; a reciprocating rod, which is driven by the machine; and a plurality of transverse scraper-plates, working in said dirt-pan; one of said scraper-plates being rigidly attached to said reciprocating rod, and the other scraper-plates being attached to the same rod by hinges.

4. In a grading or ditching machine, an elevating conveyer, which receives soil from a plow or digger; a scraper for freeing said elevating conveyer from adhering soil; a dirt-pan, which is located between the leaves of the conveyer belt; and a rod, which is reciprocable between said belt leaves; in combination with a plurality of transverse scraper-plates, which are fitted to work back and forth in said pan, one of said scraper-plates being rigidly attached to said reciprocable rod, and the other of said scraper-plates being attached to said reciprocable rod by hinges.

THOMAS F. STROUD.

Witnesses:

WILLARD EDDY,

MARY CARL.