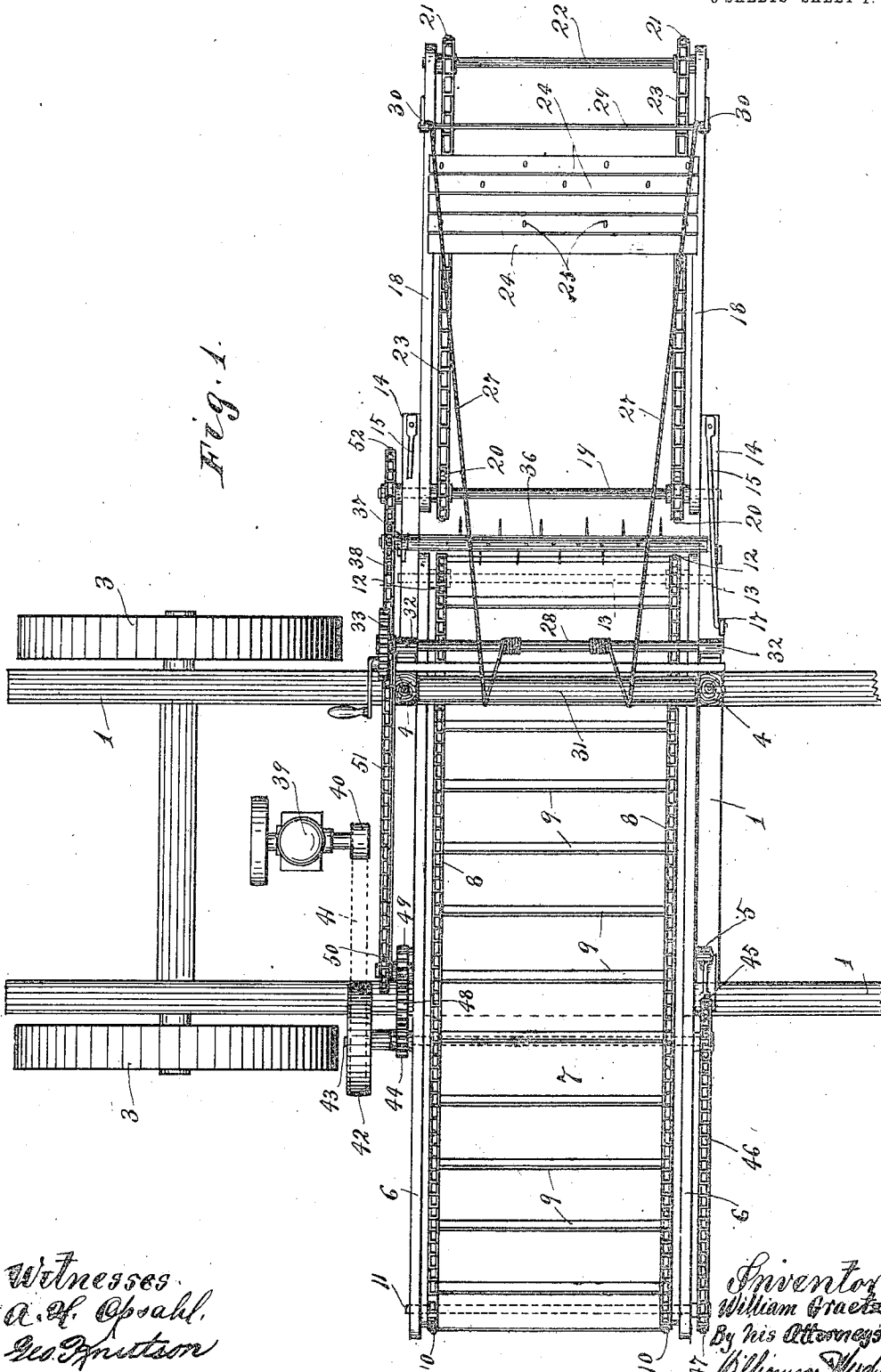


1,017,094.

W. GRAETZ.
MANURE LOADER.
APPLICATION FILED AUG. 3, 1911.

Patented Feb. 13, 1912.

3 SHEETS—SHEET 1.



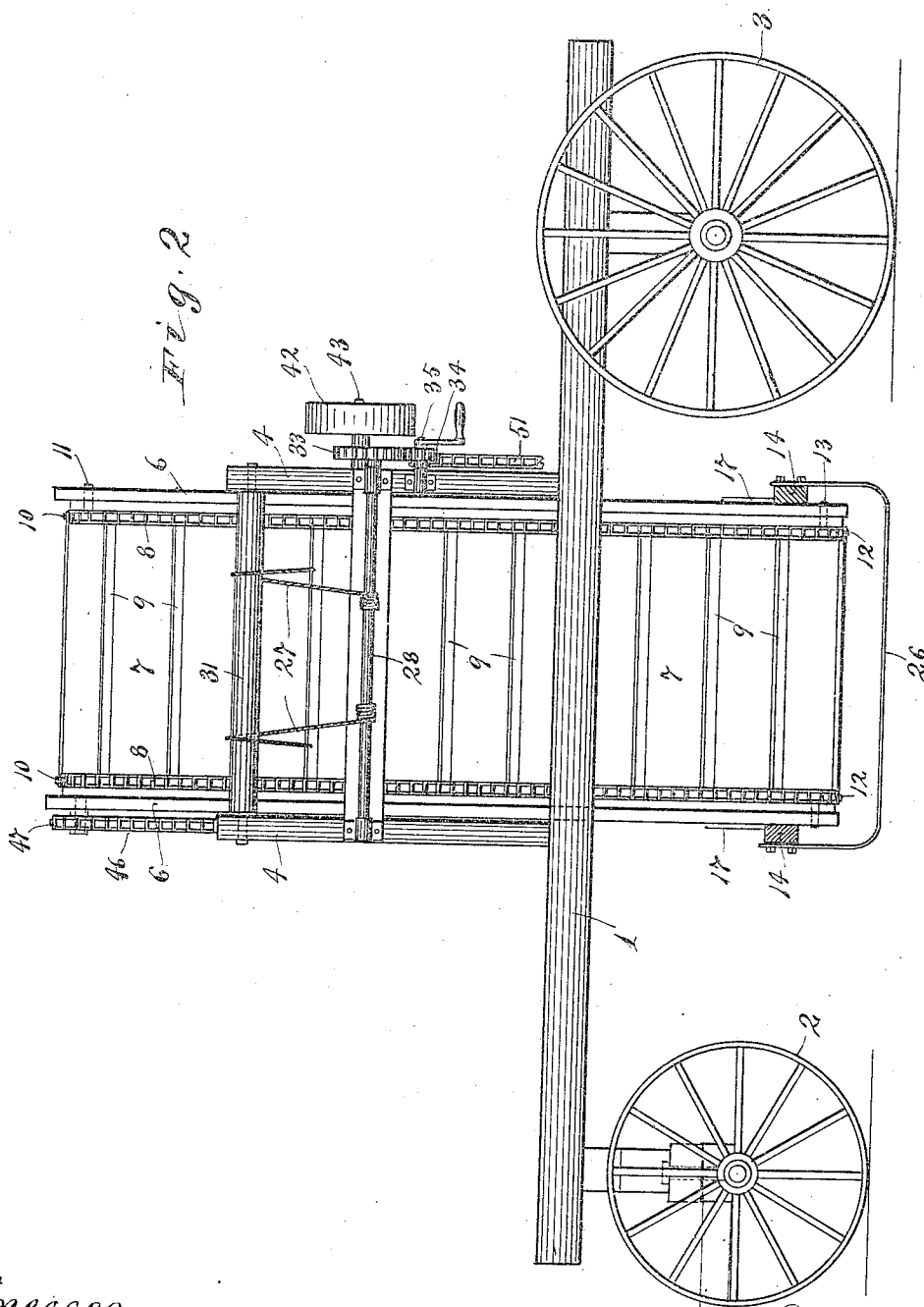
Witnesses
A. H. Opsahl.
Geo. J. J. J.

Inventor
William Graetz
By his Attorneys
William J. J.

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3 SHEETS—SHEET 2.



Witnesses.
A. H. Opsahl.
Geo. Knutson

Inventor
William Graetz
By his attorneys
William W. Merchant

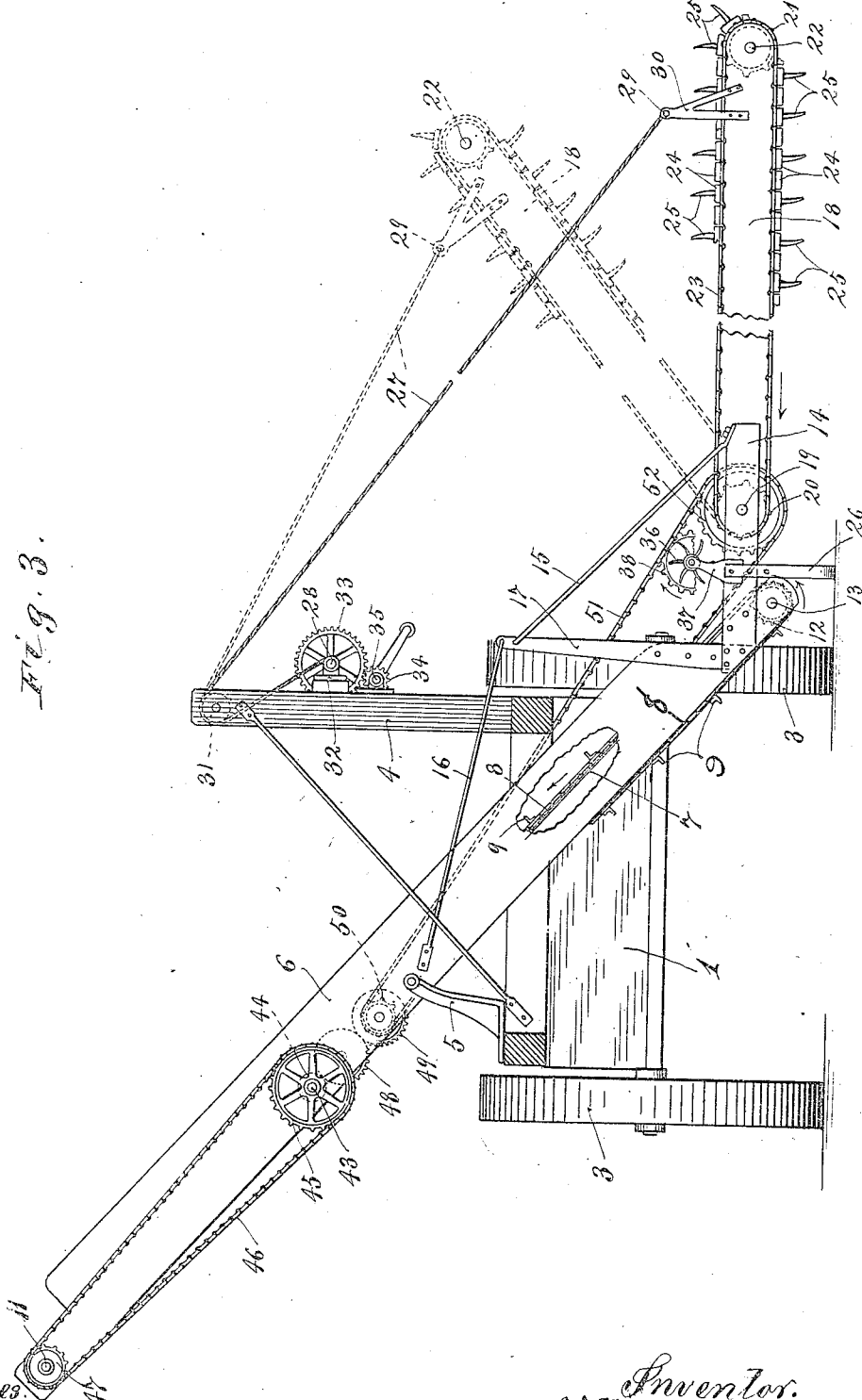
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3 SHEETS—SHEET 3.

Fig. 3.



Witnesses.
A. H. Opsahl.
Geo. Knutson

Inventor.
William Graetz.
By his Attorneys
William M. Heckard

UNITED STATES PATENT OFFICE.

WILLIAM GRAETZ, OF SUMNER, MINNESOTA, ASSIGNOR OF ONE-THIRD TO HENRY MILLER, OF BEAVER DAM, WISCONSIN, AND ONE-THIRD TO FRANK L. HODGSON, OF STEWARTVILLE, MINNESOTA.

MANURE-LOADER.

1,017,094.

Specification of Letters Patent.

Patented Feb. 13, 1912.

Application filed August 3, 1911. Serial No. 642,102.

To all whom it may concern:

Be it known that I, WILLIAM GRAETZ, a citizen of the United States, residing at Sumner, in the county of Fillmore and State of Minnesota, have invented certain new and useful Improvements in Manure-Loaders; and I do hereby 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.

My invention has for its object to provide a manure loader of high efficiency and large capacity, and to such ends, the invention consists of the novel devices and combinations of devices hereinafter described and defined in the claims.

The loader, while it is especially designed for handling manure, is, nevertheless, capable of handling various other materials, and is adapted to rake such materials from the ground or from a stack and to load the same into the box of a wagon or onto a rack located at one side of the loader. The loader is adapted to operate either while standing still or while traveling. The loader, in the form which, in practice, has been found highly efficient for the purposes had in view, is illustrated in the accompanying drawings.

In the drawings, wherein like characters indicate like parts through the several views, Figure 1 is a plan view of the loader; Fig. 2 is a side elevation of the same; and Fig. 3 is a front elevation of the loader, some parts being broken away.

The various parts of the loader are carried by a four-wheeled truck, shown as comprising a frame 1, front wheels 2, and rear wheels 3. The platform of the frame 1 is an open rectangular structure on which a pair of longitudinally spaced upright pedestals 4 are rigidly secured at one side and a pair of longitudinally spaced bearing brackets 5 are rigidly secured at the other side. A long inclined elevator frame 6 is intermediately pivoted to the bearing brackets 5, and is provided with an inclined deck 7. An endless elevator belt, shown as made up of chains 8 and transverse slats 9, runs over the endless deck 7. The upper portions of the chains 8 run over sprockets 10 secured on a shaft 11 mounted on the upper

end of the elevator frame 6. The lower portions of the said chains 8 run over sprockets 12 of a shaft 13 that is journaled in the lower portion of the elevator frame 6.

The elevator frame 6, as is already noted, is pivotally supported in an oblique position transversely of the supporting truck, and is provided at the lower end of its sides with outwardly projecting bars or supporting brackets 14. The outer ends of the bars 14 are, as shown, braced by rods 15 and 16 attached, respectively, to the said bars 14 and to the sides of the frame 6, and both attached to struts 17 secured to the sides of the said frame 6. A rake frame 18, at its inner end, is pivotally connected to the supporting bars 14, either directly by a transverse shaft 19 or by bearings surrounding the said shaft. The shaft 19 is provided with a pair of laterally spaced sprockets 20 inside of the frame 18, which sprockets aline with similar sprockets 21 carried by a transverse shaft 22 journaled in the outer end portion of the frame 18. The sprockets 20 and 21 drive an endless rake belt, shown as made up of sprocket chains 23 and closely positioned slats 24, the latter, of which, are provided with rake teeth 25. The chains 23 run directly on the sprockets 20 and 21 and the slats 24 are, of course, connected to the links of the said chains.

The inner end portion of the rake is carried by the lower end of the elevator frame 6 and the weight thereof, is sufficient to keep the lower end of said elevator frame pressed downward. Hence, to support the lower end of the said elevator frame, I provide a so-called ground engaging runner, the said term "runner" being used in a sense broad enough to include any kind of a ground engaging element, whether in the form of a sliding runner or in the form of a wheel. This runner is preferably in the form of a metal strap bent in the form of a yoke 26, the bottom of which is engageable with the ground and the up-turned ends, of which are rigidly secured to the projecting bars 14 of the said elevator frame. This yoke runner 26 is adapted to travel on the ground when the machine is driven forward, or backward, for that matter. To support the free or outer end of

the rake at different elevations, I preferably provide a windlass comprising cables 27, a windlass shaft 28, and certain cooperating devices. The extended ends of the cables 27 are, as shown, attached to a transverse rod 29, secured to the small anchor brackets 30, secured to the sides of the free ends of the rake frame 18. The other ends of the said cable 27 are attached to the windlass shaft 28, but they are extended over an idle guide roller 31 mounted in the extreme upper ends of the pedestals 4, while the said windlass shaft 28 is journaled in bearings 32 secured on the intermediate portions of the said pedestals 4. At one end, the windlass shaft 28 is provided with a spur gear 33 which, as shown, meshes with a spur pinion 34 carried by the shaft of an operating gear 35, which is journaled to a suitable bearing on one of the pedestals 4. An ordinary pawl and ratchet device, or any other suitable means, may be provided for locking the windlass shaft 28 against rotation under the weight of the rake. For stripping the manure or other material from the rake, and for insuring the delivery thereof onto the receiving end of the elevator, I provide a toothed shaft, or so-called stripper 36, which, as shown, is journaled in small bearings 37 on the bars 14, and the shaft, of which, is provided at one end with a sprocket 38.

Preferably, all of the running parts of the loader are driven from an explosive engine 39 mounted on the truck frame, the crank shaft, of which, is provided with a driving pulley 40. A belt 41 runs over the pulley 40 and over a larger pulley 42, which latter is secured to one end of a transverse shaft 43, mounted in suitable bearings on the intermediate portion of the elevator frame 6. This shaft, adjacent to the pulley 42, is provided with a spur pinion 44, and, at its other end, said shaft is provided with a sprocket 45. A sprocket chain 46 runs over the sprocket 45 and over a sprocket 47 on one end of the upper elevator shaft 11. The pinion 44 meshes with a spur gear 49, both of which gears are loosely journaled on one side of the elevator frame 6. The gear 49 carries a sprocket 50. A sprocket chain 51 runs over the sprocket 50, over the sprocket 38 and over a sprocket 52 which is secured on one end of the inner rake shaft 19. By the connections just described, it is evident that the endless elevator belt, the endless rake belt, and the toothed stripper will all be driven in the directions indicated by the arrows marked on Fig. 3. It will be noted, that the lower run of the rake is the operative portion and that it rests upon the material which will be picked up, and rakes the same along to a point where it is taken up by the receiving portion of the elevator belt. The said rake will operate in a hori-

zontal position to rake up a thin layer of material, and it will thus operate efficiently while the machine is advanced forward. Also, as is evident, the rake will work with equal efficiency to rake material from the top of a stack and to deliver the same to the elevator. The material carried upward by the elevator will be delivered from the upper end thereof into a wagon box or onto a wagon rack which is located or driven at the side of the loader. When the machine is drawn forward, while in action, the runner or shoe 26 will move over the ground and will keep the receiving end of the elevator and the delivery end of the rake at a constant distance from the ground regardless of irregularities in the ground surfaces.

The machine is of simple construction, easy to operate, efficient for the purposes had in view, and of high loading capacity.

What I claim is:

1. In a loader of the kind described, the combination with a support, of an inclined elevator having a vertically movable receiving end, a vertical adjustable rake pivotally connected to the receiving end of said elevator, and a ground engaging runner supporting the receiving end of said elevator and delivery end of said rake.

2. In a loader of the kind described, the combination with a support, of an inclined elevator intermediately pivoted thereto, a vertically adjustable rake pivotally connected to the receiving end of the said elevator, and a ground engaging runner supporting the receiving end of said elevator and the delivery end of said rake.

3. In a loader of the kind described, the combination with a support, of an inclined elevator intermediately pivoted thereto, a vertically adjustable rake pivotally connected to the receiving end of the said elevator, and a ground engaging runner supporting the receiving end of said elevator and the delivery end of said rake, and a rotary toothed stripper working in the vicinity of the receiving end of said elevator and of the delivery end of said rake.

4. In a loader of the kind described, the combination with a truck, of a transversely inclined elevator intermediately pivoted thereto, a vertically adjustable rake pivotally connected to the receiving end of said elevator, and a guide engaging runner supporting the receiving end of said elevator and the delivery end of said rake.

5. In a loader of the kind described, the combination with a truck, of a transversely inclined elevator intermediately pivoted thereto, a vertically adjustable rake pivotally connected to the receiving end of said elevator, a guide engaging runner supporting the receiving end of said elevator and the delivery end of said rake, and a stripper working in the vicinity of the re-

ceiving end of said elevator and of the delivery end of said rake.

5 6. In a loader of the kind described, the combination with a truck, of a transversely inclined elevator frame intermediately pivoted to said truck, a vertically adjustable rake frame pivoted to the lower end of said elevator frame, an endless elevator belt and cooperating guides therefor on said elevator
10 frame, an endless rake and guides therefor on said rake frame, a ground engaging runner supporting the receiving end of said elevator frame and the delivery end of said rake frame, a rotary toothed stripper work-
15 ing in the vicinity of the receiving portion of said elevator belt and of the delivery portion of said rake belt, and means for

driving the said stripper and elevator and rake belts.

7. In a loader of the kind described, the 20 combination with a truck having an open platform frame, of a transversely inclined elevator intermediately pivoted to said frame and working through the opening thereof, a ground engaging runner support- 25 ing the lower end of said elevator, and a vertically adjustable rake connected to the receiving portion of said elevator.

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

WILLIAM GRAETZ.

Witnesses:

BERNICE G. WHEELER,

HARRY D. KILGORE.