

No. 840,617.

PATENTED JAN. 8, 1907.

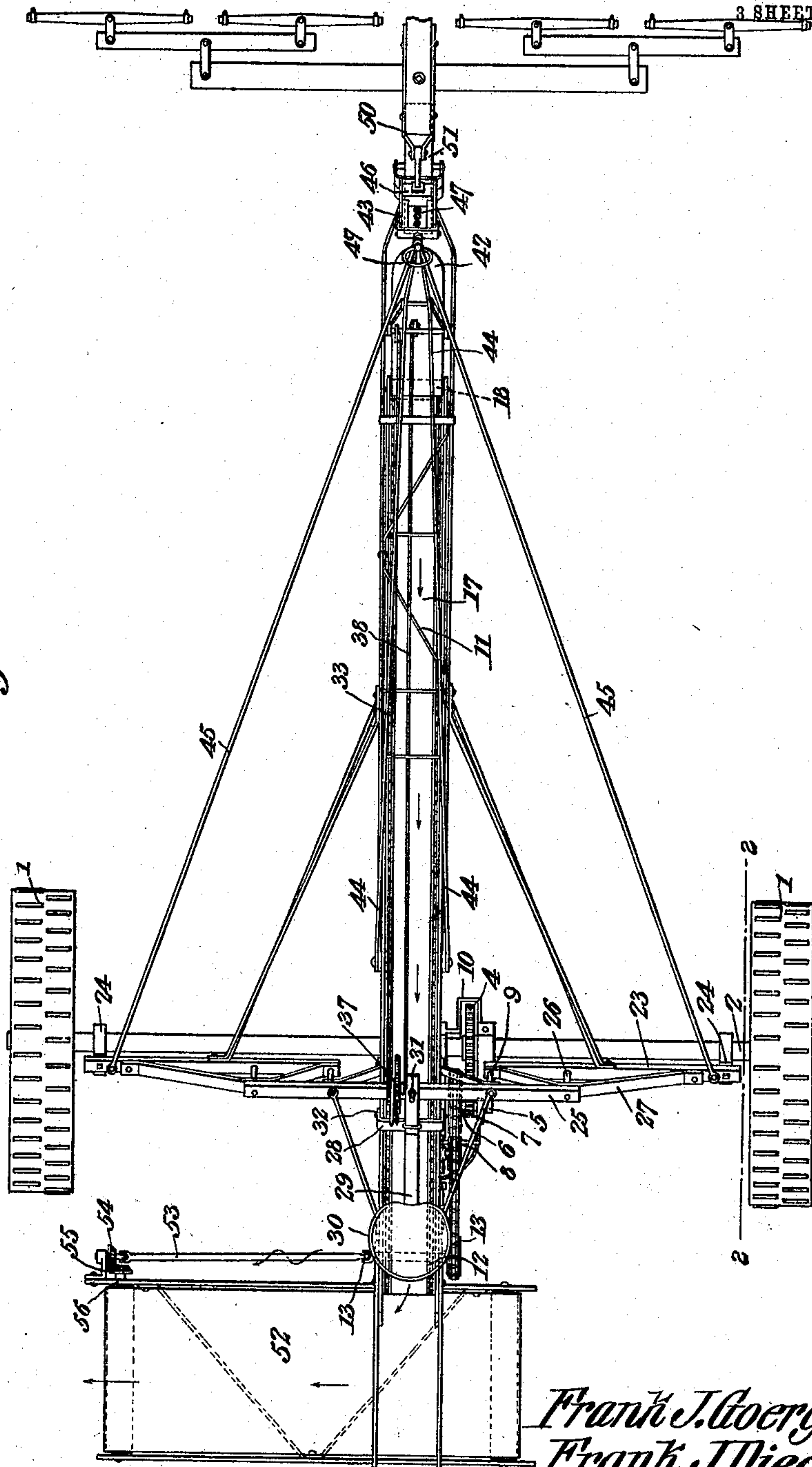
F. J. GOERGEN & F. J. DIEDERICH.

DITCHING MACHINE.

APPLICATION FILED JULY 2, 1906.

3 SHEETS-SHEET 1.

Fig. 1.



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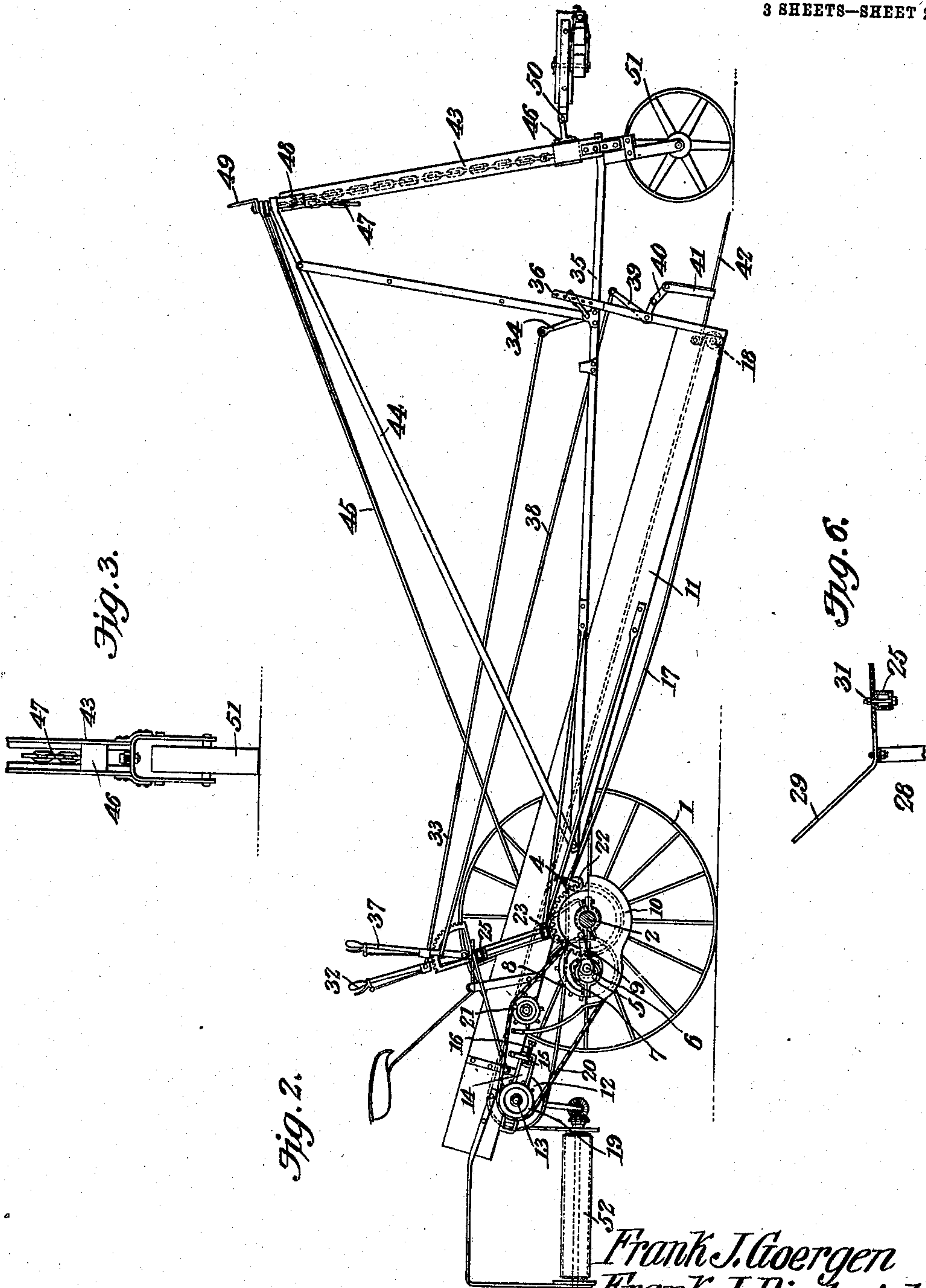
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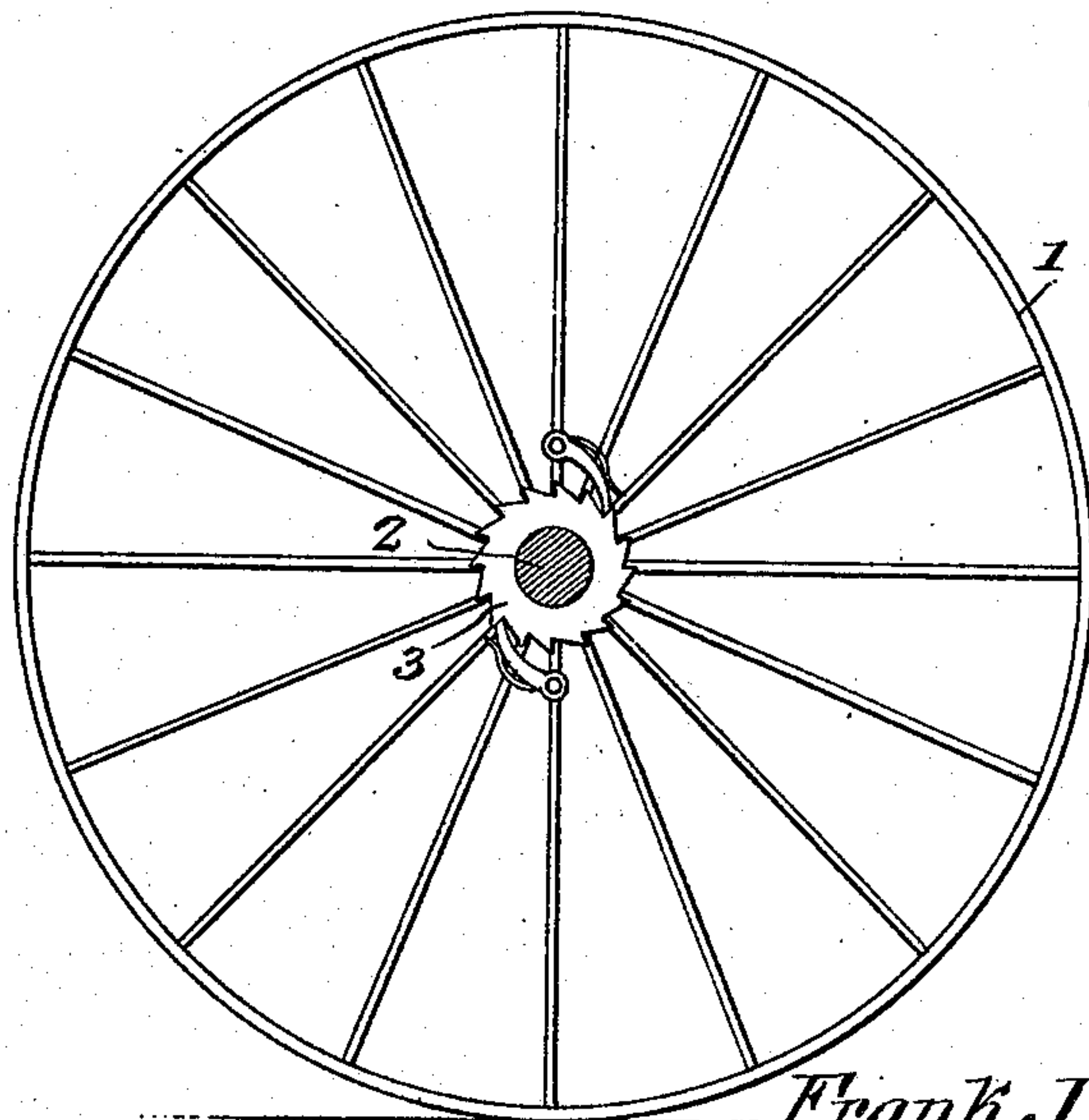
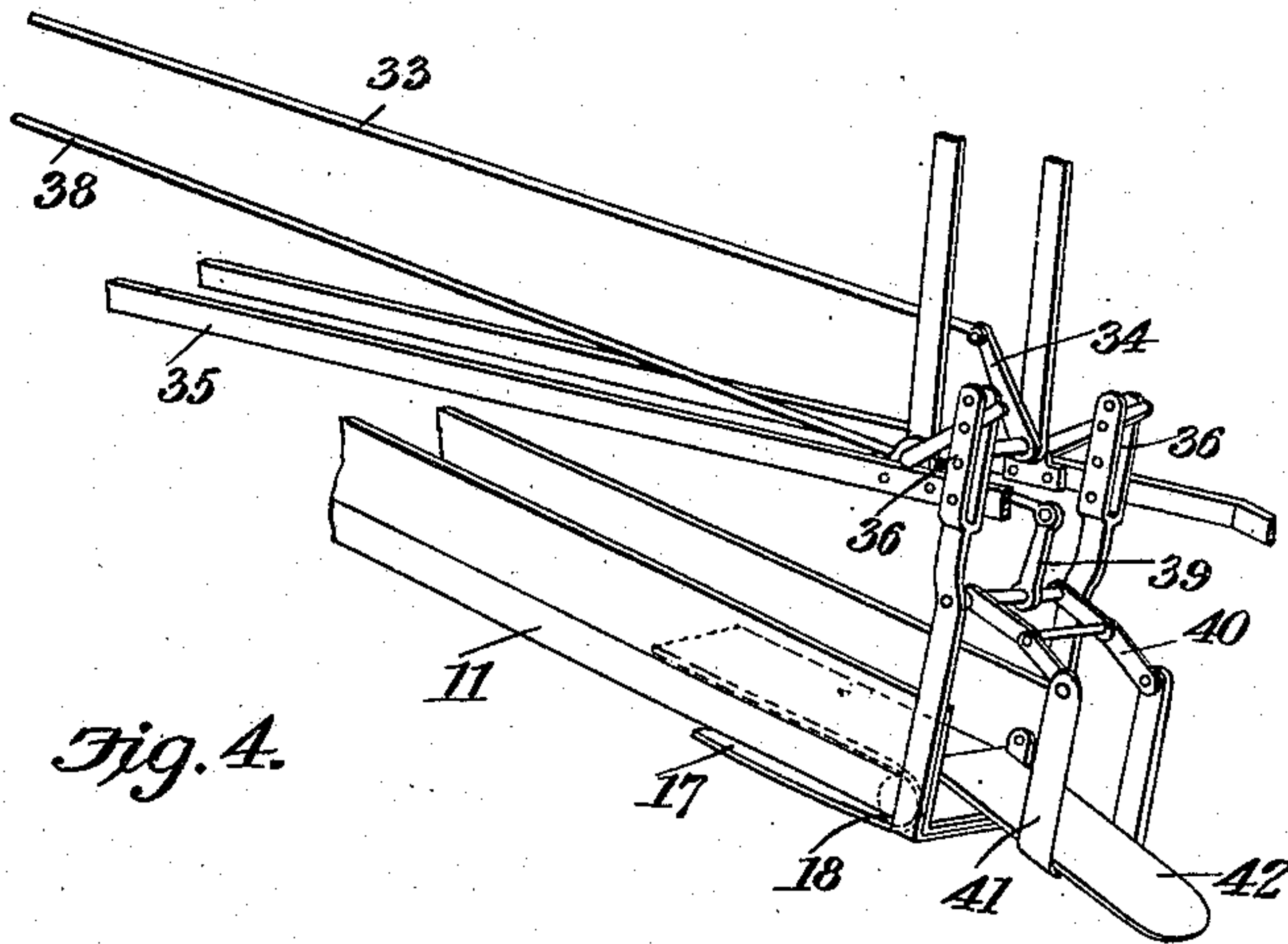
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APPLICATION FILED JULY 2, 1906.

3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

FRANK J. GOERGEN AND FRANK J. DIEDERICH, OF GRANVILLE, IOWA;
SAID DIEDERICH ASSIGNOR OF ONE-SIXTH OF HIS INTEREST TO SAID
GOERGEN.

DITCHING-MACHINE.

No. 840,617.

Specification of Letters Patent.

Patented Jan. 8, 1907.

Application filed July 2, 1906, Serial No. 324,432.

To all whom it may concern:

Be it known that we, FRANK J. GOERGEN and FRANK J. DIEDERICH, citizens of the United States, residing at Granville, in the county of Sioux and State of Iowa, have invented a new and useful Ditching-Machine, of which the following is a specification.

This invention relates to ditching-machines; and it consists in the novel construction and arrangement of its parts, as hereinafter shown and described.

The object of the invention is to provide a machine of the nature indicated which is adapted to be drawn over the ground and which will open a ditch in the ground. To accomplish this, the machine is provided with a pair of traction-wheels, which run at all times upon the surface of the ground, and a caster-wheel, which runs in the ditch. An axle is carried by the traction-wheels, and upon said axle mechanism embracing the ditching-machine is mounted. Such mechanism embraces, primarily, a conveyer which extends at right angles to the said axle and projects for some distance in front of the same and is adapted to enter the ditch. A plow is pivotally attached to the lower end of said conveyer and is adapted to loosen the earth and deposit the same upon the conveyer. A means is provided for changing or varying the angle of inclination of said plow with relation to the conveyer. A pair of guides is vertically arranged at the forward end of the ditching-machine, and within said guides is mounted a block. The draft-animal attachments are adapted to be fixed to said block, and as said block is vertically adjustable within the guides the said draft-animal attachments may be at all times maintained at the proper level. Suitable braces secure the upper ends of the said guides to the said axle or its superstructure. The traction-wheels are adapted to impart rotary motion to the axle, which in turn is provided with attachments whereby rotary motion is conveyed to the operating-shaft of the conveyer-belt. Means is also provided for interrupting such motion. At the rear end of the first said conveyer is located a second conveyer, which is disposed at right angles to the first said conveyer and is adapted to receive the earth from the same and transport it to one side of the ditch and deposit it. The laterally-extending conveyer is provided

with suitable operating means operatively connected with the drive-shaft of the first said conveyer. Means is provided for taking up the slack in the first said conveyer, and means is provided for taking up the slack in the chain which transfers rotary motion from the axle to the conveyer-operating shaft.

In the accompanying drawings, Figure 1 is a top plan view of the ditcher. Fig. 2 is a side elevation of the ditcher with part in section cut on the line 2 2 of Fig. 1. Fig. 3 is a detail edge view of the caster-wheel. Fig. 4 is a perspective view of the forward end of the conveyer. Fig. 5 is a detail side elevation of one of the traction-wheels. Fig. 6 is a detail side elevation of the lower end of the seat-post.

The traction-wheels 1 1 are mounted upon the axle 2. The pawl-and-ratchet mechanism 3 is provided at the hub of the wheels 1, whereby the said wheels transfer rotary motion to the axle 1 as the wheels rotate in one direction, but permit the axle 2 to slip when the said wheels 1 are rotated in the opposite direction. The gear-wheel 4 is fixed to the axle 2 at a point intermediate the ends thereof. The eccentric 5 is journaled in the rear of the axle 2. Said eccentric is provided with a laterally-extending shaft 6, upon which is located a pinion 7. When the eccentric 5 is thrown into one position, the pinion 7 meshes with the gear-wheel 4, and when the eccentric 5 is turned into another position the said pinion 7 passes out of mesh with the gear-wheel 4. The sprocket-wheel 8 is also located upon the shaft 6. The handle 9 is provided for the purpose of turning the eccentric 5.

The pinion and gear-wheels above described are properly protected by the housing 10. The conveyer-casing 11 is located upon the axle 2 and extends at right angles to the same and has its forward end located some distance in advance of the said axle. The roller 12 is mounted upon the shaft 13, and the said shaft in turn is journaled in the blocks 14, which are held within the guides 15. By means of the set-screws 16 said blocks may be adjusted back and forth in the guides 15 for the purpose of taking up the slack in the conveyer-belt 17. Said belt passes around the roller 12 and also around the roller 18, located at the forward end of the conveyer-casing 11. The sprocket-wheel 19

is fixed to the end of the shaft 13, and the sprocket-chain 20 passes around the sprocket-wheel 19 and the sprocket-wheel 8. The vertically-adjustable idle sprocket-wheel 21 is attached to the side of the conveyer-casing 11 and may be moved vertically for the purpose of taking up the slack in the chain 20. It will thus be seen that by adjustment of the blocks 14 the conveyer-belt 17 is affected, while by adjusting the sprocket-wheel 21 the sprocket-chain 20 is affected.

At a point above the axle 2 the conveyer-belt 17 passes over the roller 22, which prevents the said belt 17 from striking the axle 2 or its attachments. The cross-rod 23 is located above the axle 2 and is connected to the same by means of the straps or eyes 24. The rod 25 is located above the rod 23 and is supported from the same by means of the vertically-extending bars 26 and the slanting braces 27. The U-shaped iron 28 is inverted and is secured at its ends to the sides of the conveyer-casing 11. The seat-post 29 is supported by said iron 28, and the seat 30 is attached to the upper end of said post 29. The adjusting-belt 31 is provided at the lower end of the seat-post 29 and engages the bar 25, so that by its manipulation the said seat 30 may be kept in horizontal position irrespective of the angle of inclination of the conveyer-casing 11 and its attachments with relation to the surface of the ground.

The lever 32 is fulcrumed upon the cross-bar 25 and is connected, by means of the link 33, with the power end of the bell-crank lever 34. The said lever 34 is fulcrumed upon the frame 35, which extends in a forwardly direction from the conveyer-casing 11 and is pivotally attached to the same at a point just in advance of the axle 2. The working end of the bell-crank lever 34 is adjustably attached to the upper ends of the straps 36, the lower ends of which are attached to the conveyer-casing 11.

It is obvious that by the manipulation of the lever 32 that through the link 33, the bell-crank lever 34, and straps 36 that the forward end of the conveyer-casing 11 may be vertically adjusted.

The lever 37 is fulcrumed upon the superimposed cross-bar 25 and is connected, by means of the link 38, with the power end of the bell-crank lever 39. Said bell-crank lever is fulcrumed between the straps 36 36. The working end of the said lever 39 is connected, by means of the links 40, with the straps 41, which in turn are attached to the plow-point or cutter 42, said cutter being pivotally attached at its rear end within the mouth of the conveyer-casing 11. The upwardly-extending parallel guides 43 are located at the forward end of the frame 35 and are attached thereto.

The braces 44 are attached at their lower

ends to the sides of the conveyer-casings and at their upper ends to the upper ends of the said guides 43. The braces 45 are similarly attached at their upper ends to the guides 43 and at their lower ends to the bar 23 or its attachments. The block 46 is adapted to slide longitudinally of the guides 43. Said block is held at the desired level by the chain 47, which is caught into the hook 48, that is carried by the forward ends of the braces 44. The ring 49 is located at the forward ends of braces 44 and 45, and the reins which guide and control draft-animals (not shown) pass through said ring 49. The draft-animal attachments 50 are secured to the block 46.

It is obvious that in cutting a ditch the wheel 51, which is pivoted at the forward end of the frame 35, travels upon the bottom of the ditch, while the traction-wheels 1 travel upon the surface of the ground and impart through their connections their movements to the belt 17. As the implement advances, the cutter 42 cuts the earth in the bottom of the ditch, the strips 41 cut the earth at the sides of the ditch, and the earth thus loosened is skidded or shunted back upon the belt 17, which within the casing 11 is traveling in a rearward direction. The earth is thus carried up to the rear end of the conveyer-casing 11 and is deposited upon the transversely extending and operating conveyer 52. The said conveyer 52 carries the earth to one side of the ditch and deposits the same. Movement is transmitted to the conveyer 52 by means of the shaft 53, which is attached at one end to the end of the shaft 13 and at its other end to the shaft of the bevel gear-wheel 54, which in turn meshes with the bevel gear-wheel 55, attached to the shaft 56 of the outer roller of the belt of conveyer 52.

Having described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A ditching-machine comprising an axle, traction-wheels supporting the same, a conveyer superimposed upon the axle, a forwardly-extending frame, a wheel supporting the forward end of said frame, guides located at the forward end of the frame, a vertically-adjustable block retained between the guides, and braces extending from the guides to the axle.

2. A ditching-machine comprising an axle, traction-wheels supporting the same, a conveyer superimposed upon the axle, a frame connected with the axle, a wheel supporting the forward end of said frame, a seat superimposed above the axle, and means for adjusting said seat whereby the same may be maintained at a desired level.

3. A ditching-machine, comprising a wheel-mounted axle, a conveyer superimposed upon the axle and having upwardly-extend-

ing straps, a cutter pivoted to the conveyer,
a lever fulcrumed to said straps and be-
ing operatively connected to said cutter, a
wheel-supported frame extending over the
5 conveyer, a lever fulcrumed to said frame
and being adjustably attached to said straps.
In testimony that we claim the foregoing

as our own we have hereto affixed our signa-
tures in the presence of two witnesses.

FRANK J. GOERGEN.
FRANK J. DIEDERICH.

Witnesses:

MATH M. GOERGEN,
H. C. GRAFF.