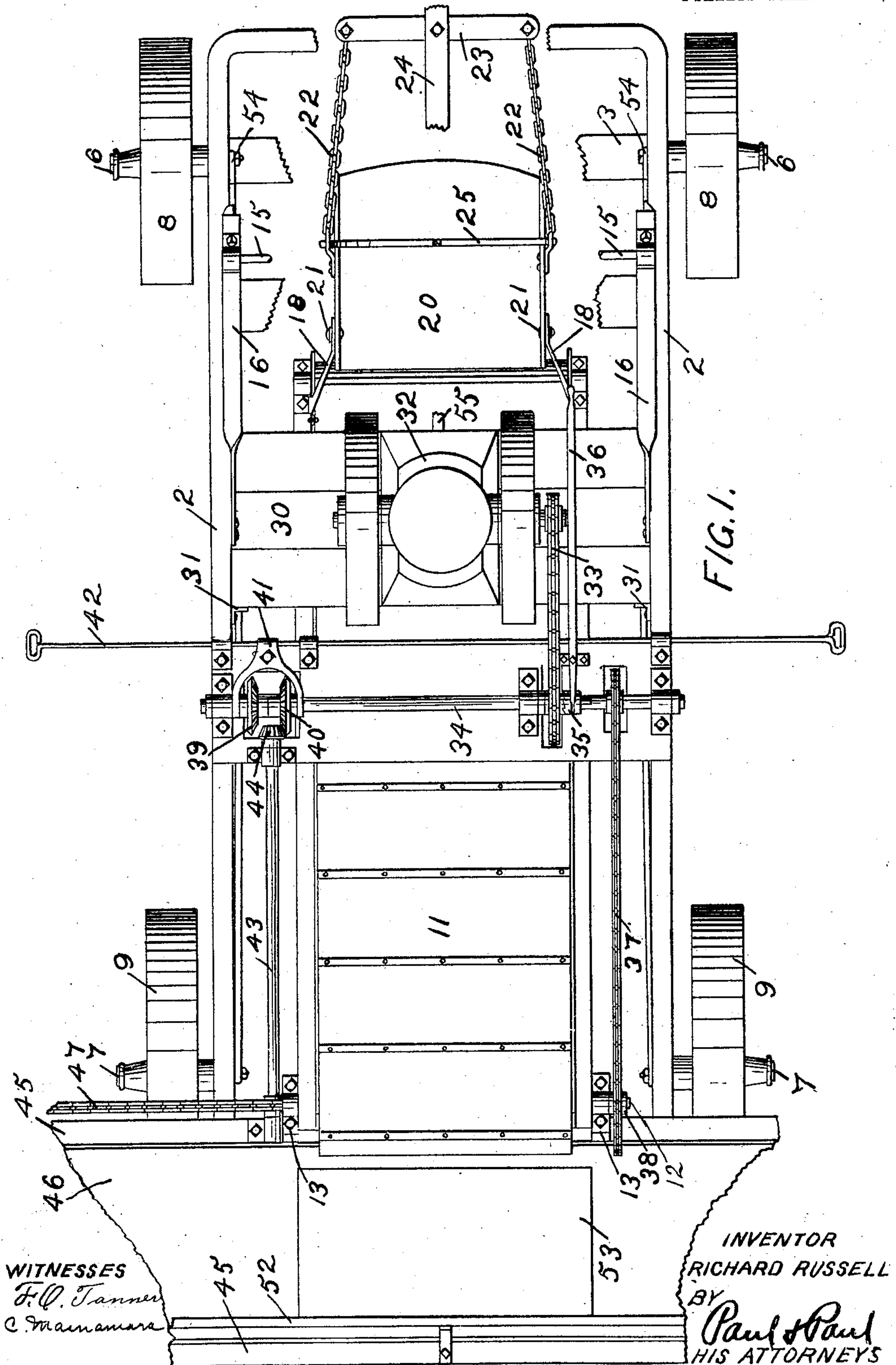


No. 861,395.

PATENTED JULY 30, 1907.

R. RUSSELL.
EXCAVATING MACHINE.
APPLICATION FILED MAY 18, 1905.

4 SHEETS—SHEET 1.



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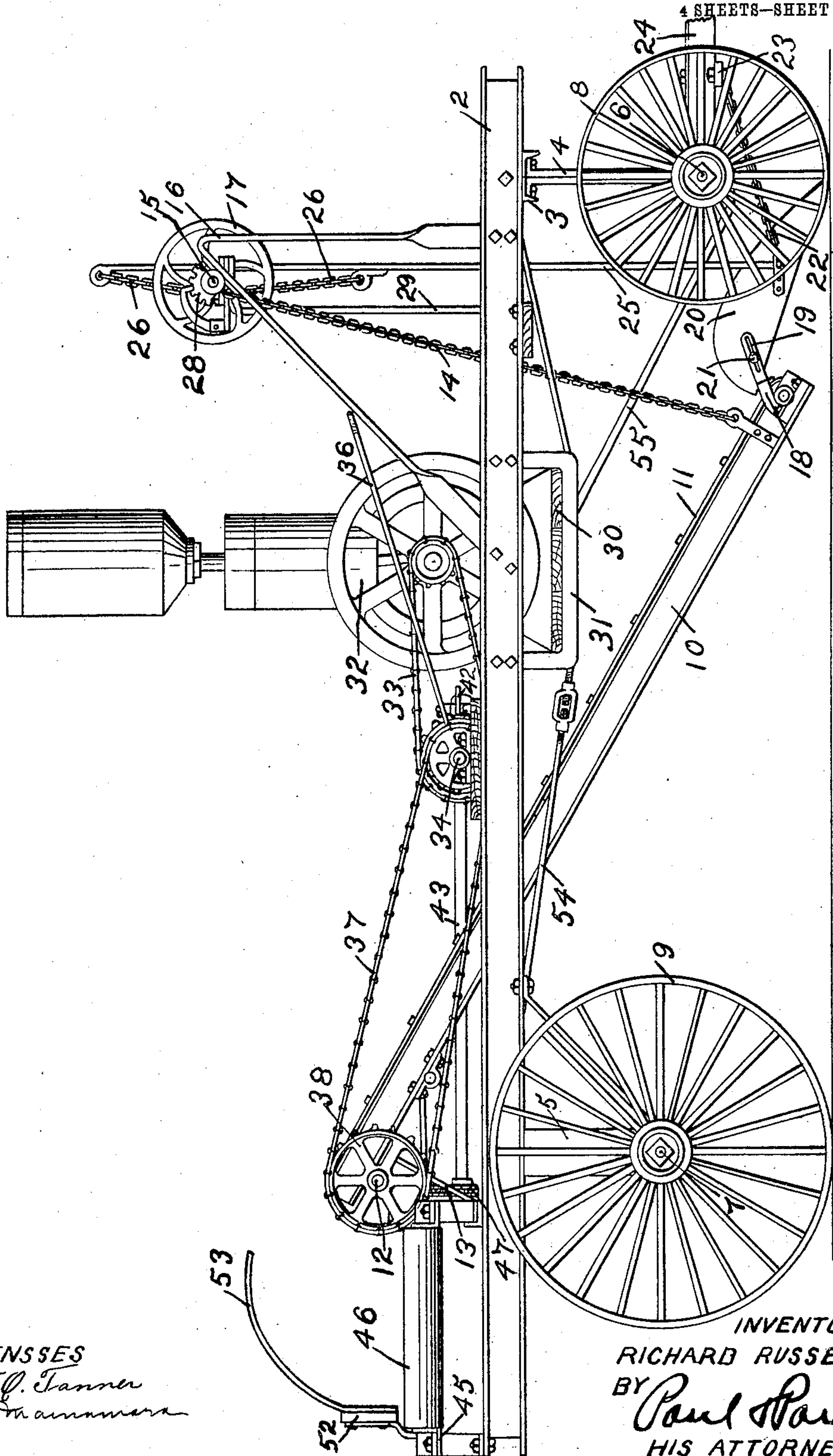


FIG. 2.

WITNESSES
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C. M. Munnick

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4 SHEETS—SHEET 3.

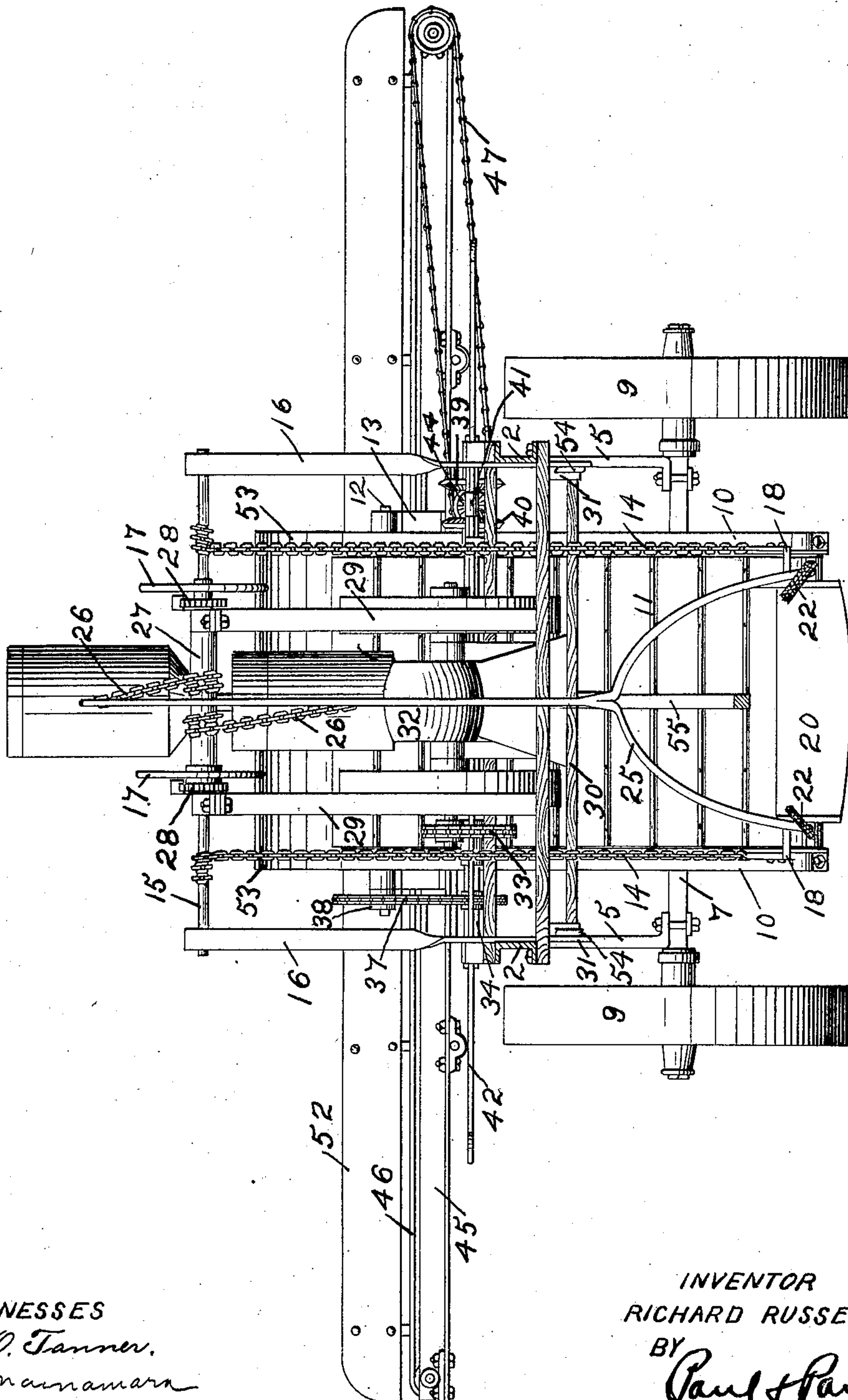


FIG. 3.

WITNESSES
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4 SHEETS—SHEET 4.

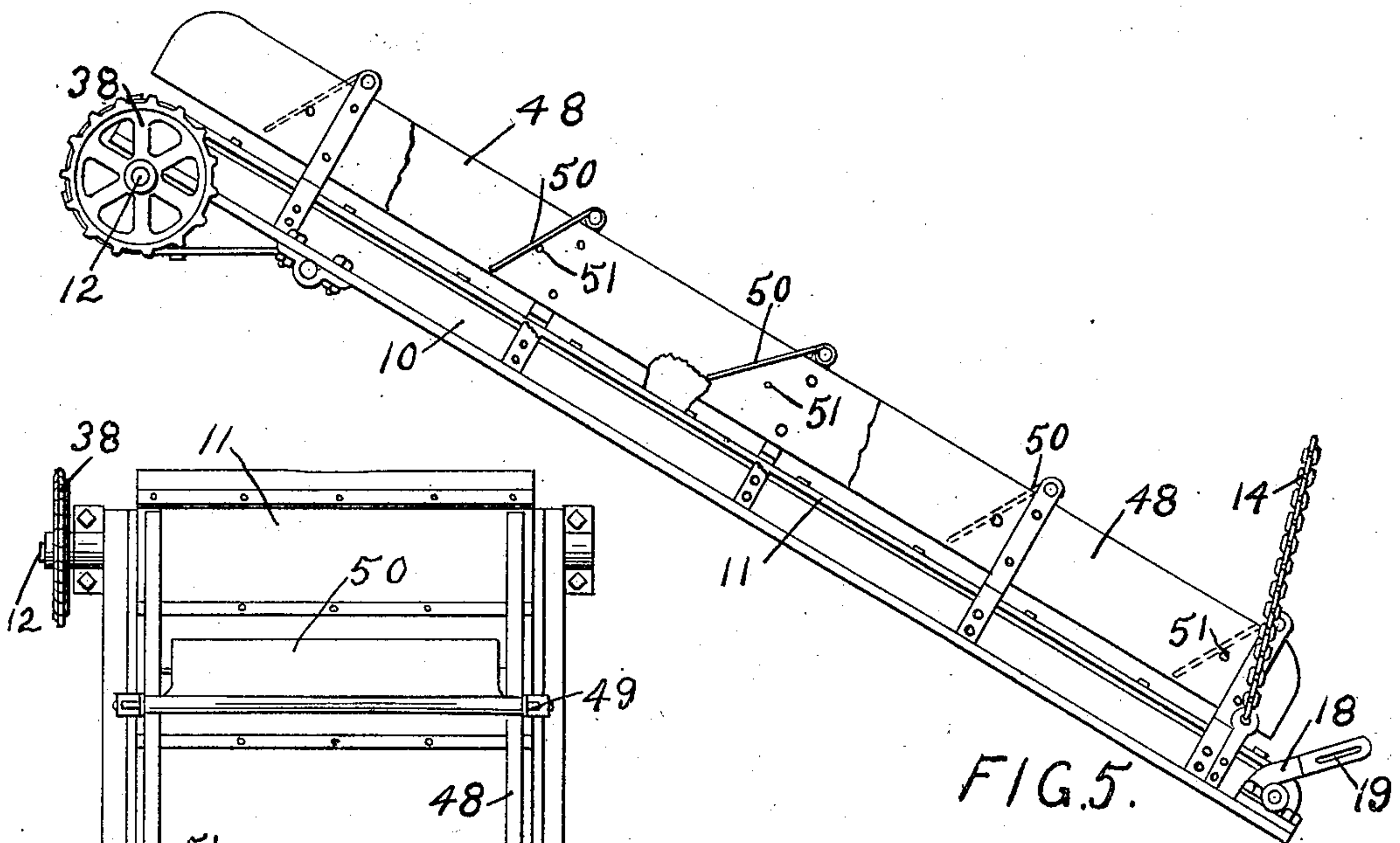


FIG. 5.

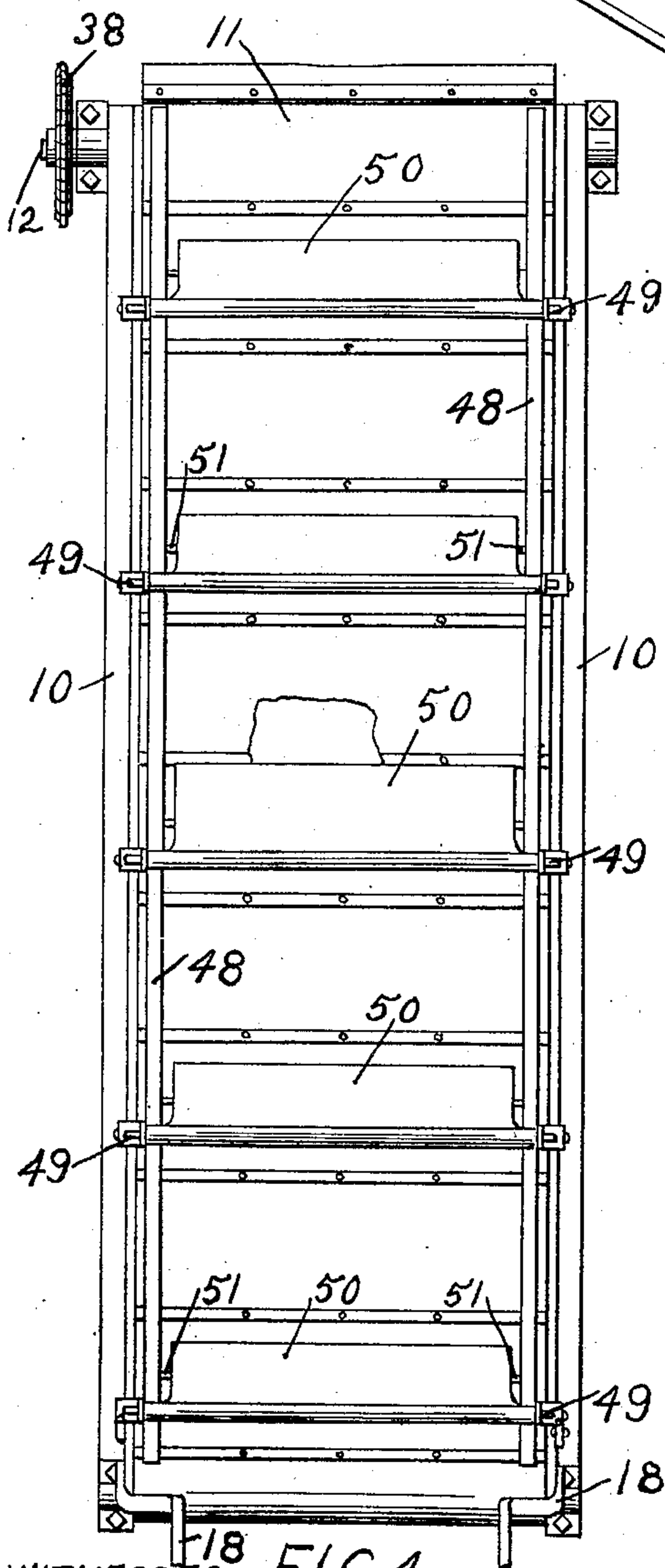


FIG. 4.
WITNESSES
F. Q. Tanner.
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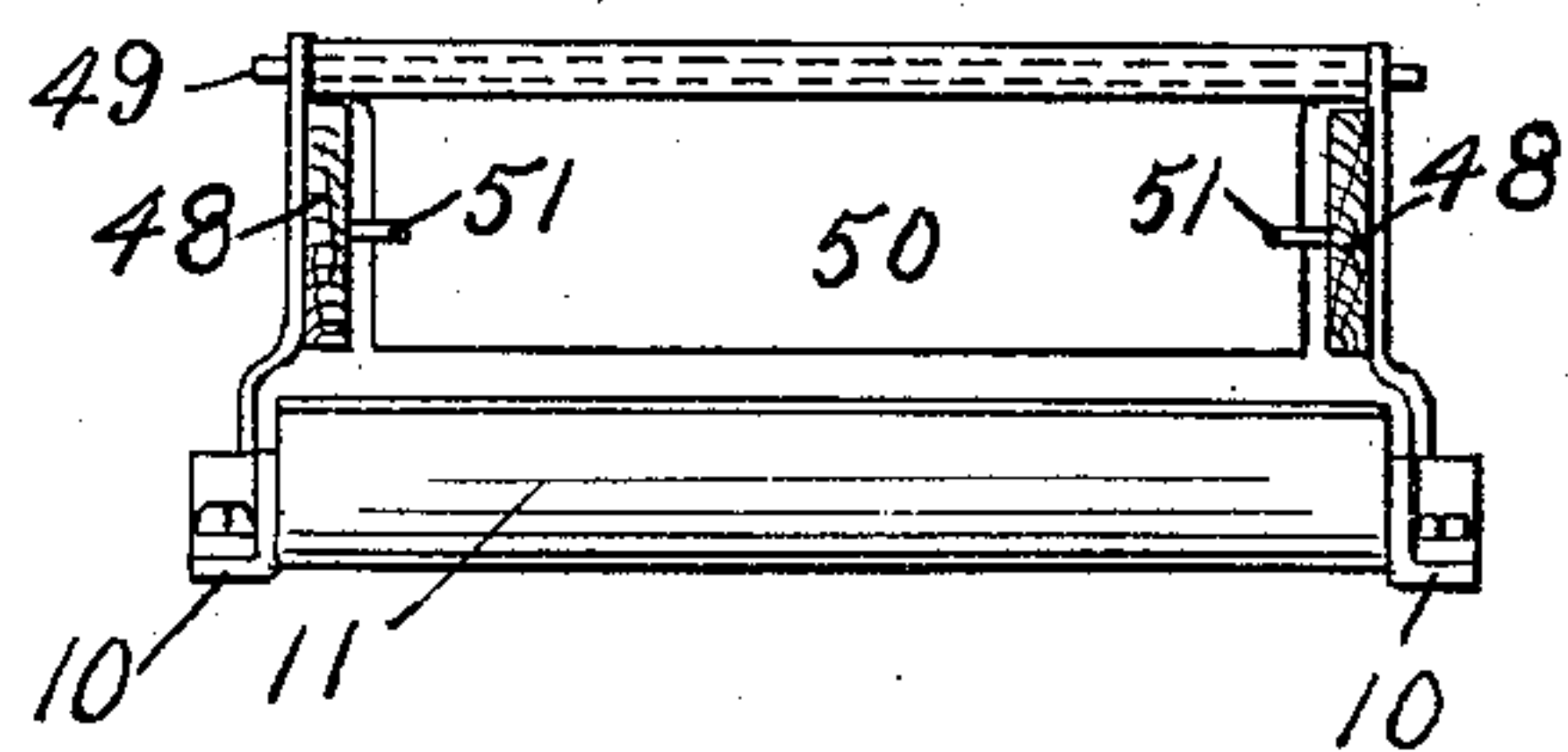


FIG. 6.

INVENTOR
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UNITED STATES PATENT OFFICE.

RICHARD RUSSELL, OF STEPHEN, MINNESOTA.

EXCAVATING-MACHINE.

No. 861,395.

Specification of Letters Patent.

Patented July 30, 1907.

Application filed May 18, 1905. Serial No. 260,950.

To all whom it may concern:

Be it known that I, RICHARD RUSSELL, of Stephen, Marshall county, Minnesota, have invented certain new and useful Improvements in Excavating-Machines, of which the following is a specification.

The object of my invention is to provide a machine for elevating sand or gravel and delivering it to a wagon or other receptacle.

The invention consists generally in a scoop, an elevator belt operating in connection therewith, and a carrier arranged to receive the material from said belt and deliver it upon either side of the machine.

Further, the invention consists in various constructions and combinations, all as hereinafter described and particularly pointed out in the claims.

In the accompanying drawings forming part of this specification, Figure 1 is a plan view of a grading machine embodying my invention. Fig. 2 is a side elevation of the same. Fig. 3 is a front elevation. Fig. 4 is a plan view of a device provided in connection with the elevator to prevent the sand or gravel from sliding back to the foot of the elevator during the process of elevating it. Fig. 5 is a side elevation of the elevator illustrating the process of the retarding devices thereon. Fig. 6 is a transverse section through the elevator.

In the drawings, 2 and 3 represent side and cross bars of the machine frame composed preferably of channel bars and supported upon standards 4 and 5 mounted on the forward and rear axles 6 and 7 provided with suitable traction wheels 8 and 9.

10 is an elevator frame arranged at an incline between the forward and rear axles and carrying a slatted belt 11. A shaft 12 is mounted on said frame near its upper ends and has bearings on each side in brackets 13 which allow a vertical swinging movement of the elevator frame to raise or lower the belt. The lower end of said frame has flexible connections such as chains 14 with a shaft 15 supported on brackets 16 and provided with an operating wheel 17. By means of this wheel the person in charge of the machine can raise or lower the receiving end of the elevator frame and belt. The lower end of the elevator frame is provided with brackets 18 having slots 19 wherein a scoop or dipper 20 is adjustable by means of bolts 21. The dipper is connected on each side by chains 22 with a cross bar 23 centrally pivoted on the draft pole or tongue 24. A bail 25 is provided on the said dipper and extends to a point above the shaft 15 and is connected above and below the level of said shaft by chains 26 with a sleeve 27 loosely mounted on the shaft 15 and having an operating wheel similar to the one described on said shaft, and both said sleeve and shaft have ratchet locking devices 28, by means of which the shaft and sleeve can

be locked in any desired position. Brackets 29 are provided on each end of said sleeve to brace and support the middle portion of said shaft. By revolving the sleeve 27 the nose of the dipper or shovel can be raised or lowered according to the character of the soil in which it is working, and by adjusting the rear portion of the dipper on the elevator frame its angle with respect thereto and its distance therefrom can be controlled.

The platform 30 is preferably suspended below the frame of the machine upon hangers 31 and carries an engine 32, preferably of the gasoline type, though any other motive power can be used if preferred. A chain 33 connects the driving shaft of the engine with a shaft 34 mounted in bearings on the machine frame and extending transversely thereof and provided with a clutch device 35 operated from a handle 36 to enable the operator to start or stop the elevator. A drive chain 37 connects the shaft 34 with a sprocket 38 secured on the shaft 12. The other end of the shaft 34 is provided with two sliding beveled gears 39 and 40 splined on the shaft 34 and adapted to be moved lengthwise thereof by means of a yoke 41 controlled by a rod 42 that projects beyond the machine frame on each side in position to be grasped by the driver of the wagon, or any other person. A shaft 43 has bearings on the machine frame substantially at right angles to the shaft 34, and is provided with a pinion 44 to mesh with either one of the gears 39 and 40. A carrier frame 45 is arranged transversely of the machine and has its ends extending beyond the sides of the same, and is provided with a carrier belt 46 that is driven at one end of said frame by a chain 47 from the shaft 43. When the pinion 44 is in engagement with one of the gears 39 and 40 the carrier 46 will be driven in one direction, and when the pinion 44 is in engagement with the other gear the carrier 46 will be driven in the other direction, and the direction of movement of said carrier can be easily and quickly controlled by the operation of the rod 42 to change the position of the gears 39 and 40. When one gear moves into engagement with the pinion 44 it pushes the other gear out of engagement, and it is only necessary for the driver of the wagon as he approaches the machine on either side to pull the rod 42 and set the gears to deliver the sand or gravel on that side.

It is desirable in a machine of this kind to provide some means to prevent the sand or gravel from sliding back to the foot of the elevator during the elevating operation. I therefore provide side boards 48 connected at intervals by cross rods 49 and pivoted wings 50 on these rods arranged to swing vertically above the elevator and drop down by gravity against stop pins 51 with their lower edges a sufficient distance above the elevator to clear the same and prevent the sand or gravel that is brought up by the elevator from rolling

back and retarding the operation of the machine and decreasing its capacity. When the gravel or sand strikes the wings 50 they will swing upwardly on their pivots and allow the passage of the material, and will then drop down upon the stop pins and effectually prevent its returning to the foot of the elevator. I prefer to provide a side board 52 on the transverse carrier frame and mount thereon a fender or guard 53 opposite the discharge end of the elevator to prevent the material brought up thereby from being discharged entirely over the carrier. The frame of the machine is suitably strengthened by the truss and brace rods 54 and 55.

In operating the machine, the elevator is adjusted at the desired angle and the scoop or dipper arranged at the proper pitch to gather up the sand or gravel and discharge it upon the elevator as the machine moves along. The elevator will quickly raise the material to the top of the machine and discharge it upon the transversely operating carrier, from whence it will be delivered upon either side of the machine as desired. In this way a number of wagons can be easily and quickly loaded as fast as they can be driven up to the machine in position to receive the load from the transverse carrier.

This machine is particularly adapted for use where the cut is narrow, or there is but little room for the machine to operate in and where an ordinary side delivery grader, on account of the space required for it to work in, could not be used.

I claim as my invention:

1. The combination, with a wheeled frame, of an elevator arranged at an incline therein, a scoop or shovel having adjustable pivots near the receiving end of said elevator, a draft device attached to said scoop and a transverse carrier located at the opposite end of said elevator.
2. The combination, with a wheeled frame, of an elevator operating at an incline therein, a scoop or shovel pivotally supported at the receiving end of said elevator, a draft device connected with said scoop, a transverse carrier located at the discharge end of said elevator, and means for operating said carrier in either direction and means extending outwardly from said frame on each side thereof for controlling said operating means.
3. The combination, with a frame, of an elevator belt supported at an incline therein, a scoop or shovel having adjustable pivots near the receiving end of said belt, a draft device attached to said scoop, means for adjusting said scoop vertically, and a side delivery carrier arranged to receive the material from the discharge end of said belt.
4. The combination, with a frame, of an elevator belt, a pivoted scoop or shovel having a bail, means for adjusting said bail to raise or lower the nose of said scoop, and means for adjusting the pivots of said scoop substantially as described.
5. The combination, with a frame, of an elevator belt, a scoop or shovel having adjustable pivots, and means for

raising or lowering the nose of said scoop or shovel, for the purpose specified.

6. The combination, with a frame, of an elevator belt, a scoop or shovel, draft chains connecting said scoop with the draft pole of said frame, and means for raising or lowering the receiving end of said elevator belt and said scoop.

7. The combination, with a frame, of an elevator belt supported therein, a pivoted frame whereon said elevator belt is mounted, and a scoop or shovel pivotally supported on the receiving end of said elevator frame, and a draft device connected with said scoop substantially as described.

8. The combination, with a wheeled frame, of an elevator frame arranged at an incline therein and lengthwise of said wheeled frame and pivotally supported at its upper end, an elevator belt mounted in said inclined frame and having its receiving end near the ground, a scoop or shovel carried by the lower end of said inclined frame, and means for adjusting said inclined frame and said shovel, and a draft device connected with said shovel substantially as described.

9. The combination, with a frame and an elevator belt mounted therein, of a transverse carrier supported on said frame, a scoop or shovel arranged to deliver sand or gravel to said elevator belt, means for driving said elevator belt and said carrier, and operating means projecting laterally on each side of said frame for reversing the direction of movement of said carrier, for the purpose specified.

10. The combination, with an elevator belt and a scoop or shovel therefor, of retarding devices suspended above said belt and arranged to allow the free upward movement of said material in said belt but prevent its backward movement, substantially as described.

11. The combination, with an elevator belt and a scoop or shovel arranged to deliver material thereto, of pivoted wings suspended above said belt and having a free vertical movement, and means for limiting their downward movement, substantially as described.

12. The combination, with a suitable frame having carrying wheels, of an elevator belt supported at an incline therein, a scoop or shovel arranged at the lower or receiving end of said belt, a transverse carrier operating on said frame at the upper end of said belt, means for driving said carrier in either direction to discharge the material on either side of the machine, and operating means extending outwardly from said frame on each side thereof, and whereby said driving means is controlled, substantially as described.

13. The combination, with a frame having carrying wheels, of an elevator supported at an incline on the frame and having a gathering scoop or shovel at its lower end, a transverse carrier provided at the discharge end of said elevator, means for driving said carrier in either direction and a rod projecting horizontally upon each side of said frame and whereby said driving means is controlled, substantially as described.

In witness whereof, I have hereunto set my hand this 12th day of May 1905.

RICHARD RUSSELL.

Witnesses:

RICHARD PAUL,
C. MACNAMARA.