

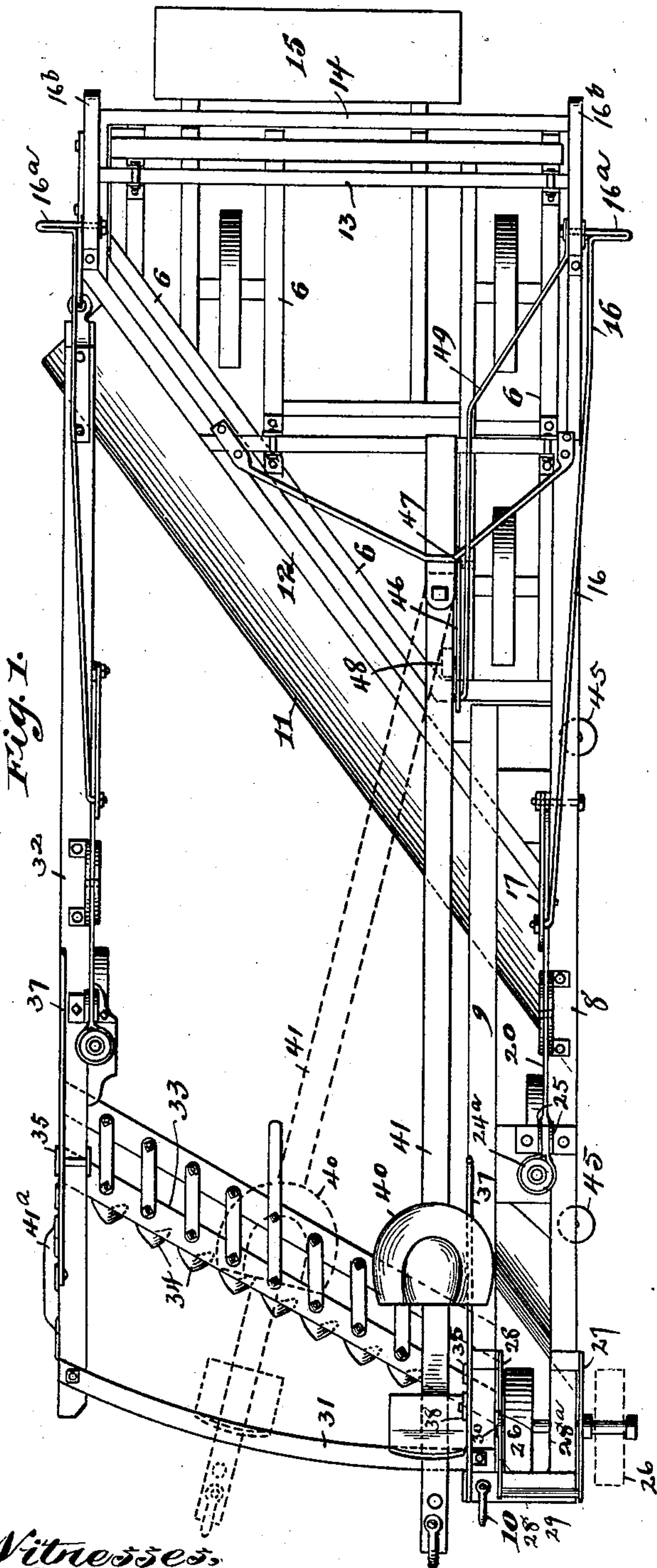
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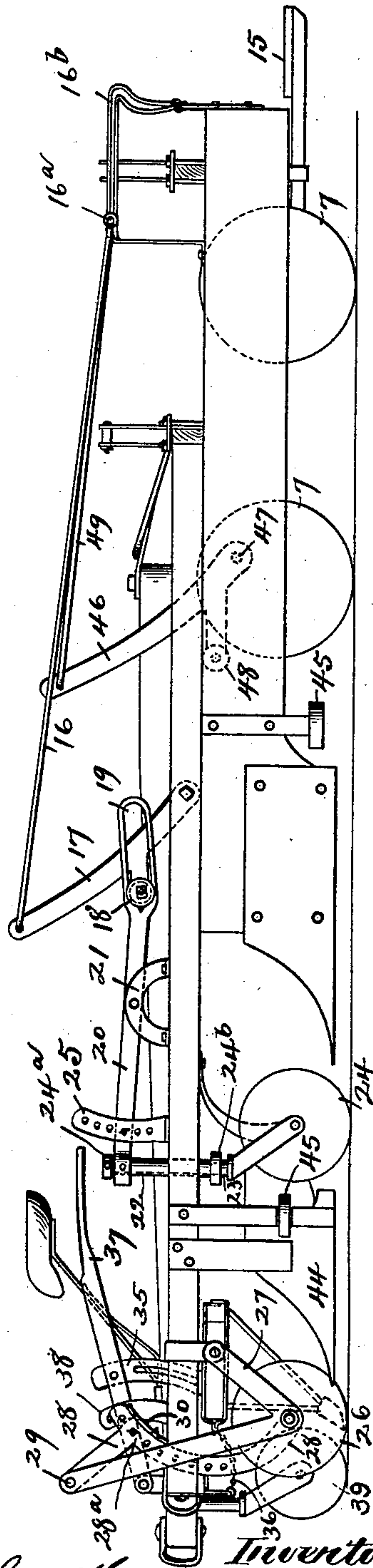
J. HEUERMANN.
GRADING AND SCRAPING MACHINE.

No. 588,992.

Patented Aug. 31, 1897.



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J. J. Mann,
Frederick Goodwin



Inventor,
John Heuermann
By Alfred Towle Luthicum
Minn.

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2 Sheets—Sheet 2.

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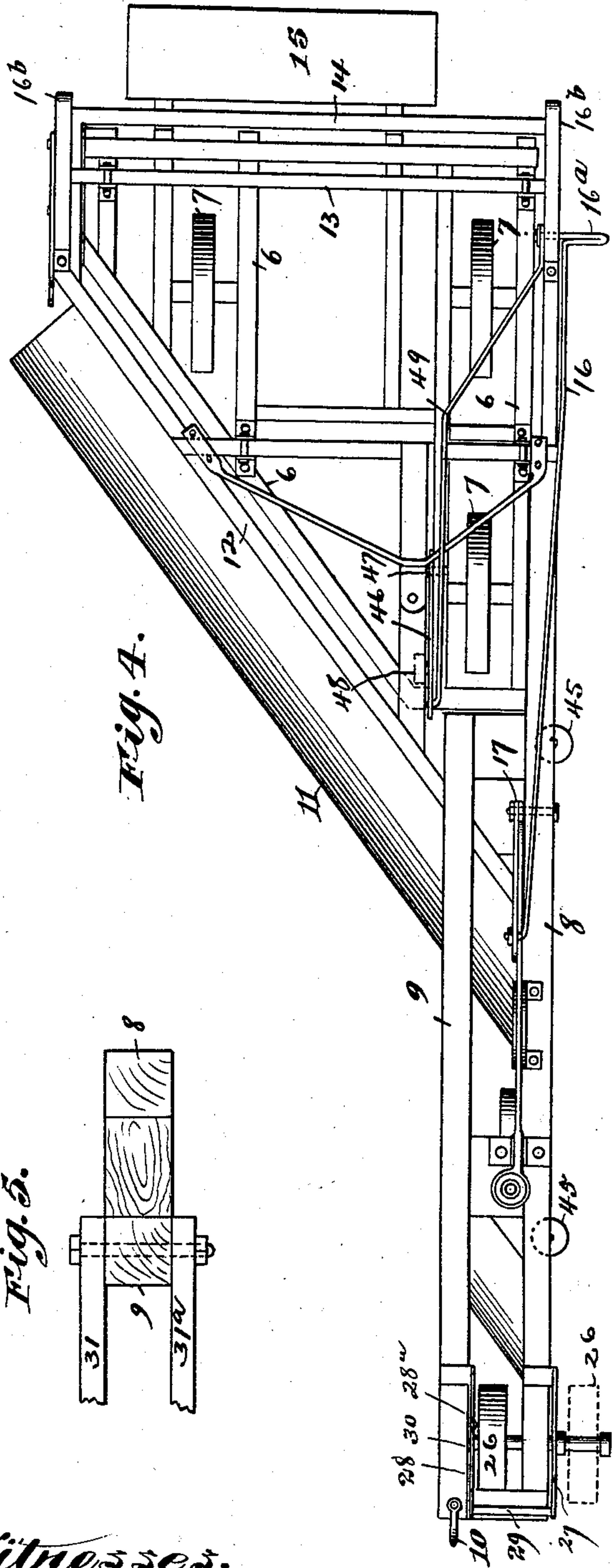


Fig. 4.

Fig. 5.

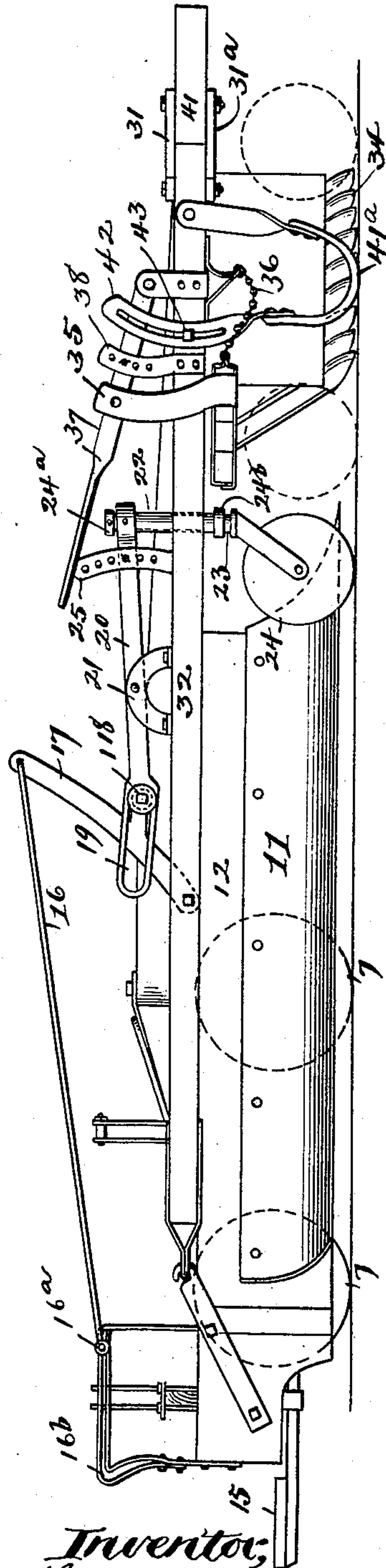
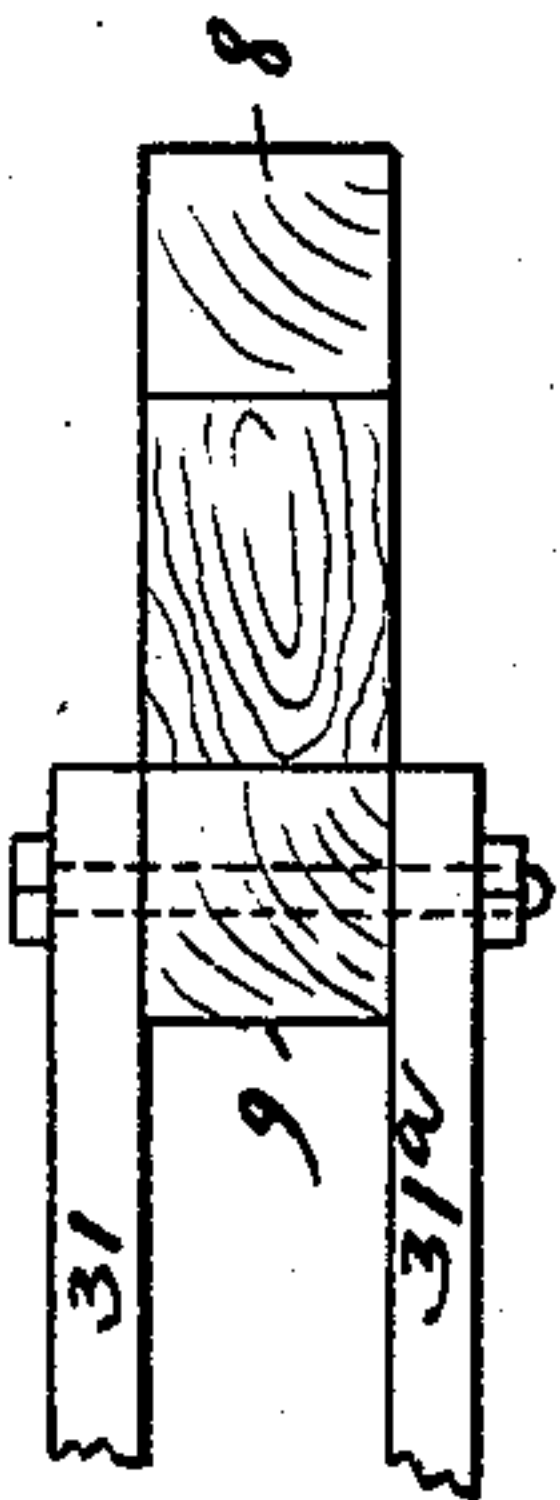


Fig. 3.

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UNITED STATES PATENT OFFICE.

JOHN HEUERMANN, OF OAK PARK, ILLINOIS.

GRADING AND SCRAPING MACHINE.

SPECIFICATION forming part of Letters Patent No. 588,992, dated August 31, 1897.

Application filed February 23, 1897. Serial No. 624,517. (No model.)

To all whom it may concern:

Be it known that I, JOHN HEUERMANN, of Oak Park, Illinois, have invented certain new and useful Improvements in Grading and Scraping Machines, of which the following is a specification.

My present invention relates to improvements on machines of the class for which Letters Patent were granted to me June 25, 1895, No. 541,546, and March 10, 1896, No. 556,313.

My improvements consist in the addition of certain devices or parts and in an improved construction of some of the parts shown in my said previous patents.

My improved scraper and grader comprises the following elemental parts—viz., a wheeled truck arranged at the rear of the machine and on which said rear end is carried; a scraper-frame adjustably mounted on said truck and having draft-timbers arranged parallel to the line of draft and a scraper secured thereto and extending across the machine diagonally to the line of draft outside of the truck-frame; a supplemental frame detachably connected to said main frame and provided with a breaker-beam; a swinging draft-pole pivoted at its rear end to the main frame and suitably guided at its front end in the supplemental frame; supporting-wheels having extended shanks mounted so as to slide in bearings on the frame and located between the scraper and the breaker, and suitable levers and connections whereby the front end of the machine may be raised for moving from place to place or lowered into position for use. The first of my said patents describes and shows the wheeled truck and the adjustable main frame carrying the scraper, and the second of my said patents describes and claims the breaker-beam.

My present improvements relate more particularly to means whereby the front end of the machine can be raised and lowered from the rear end of the machine; to the provision of an adjustable breaker-beam; to a novel construction and arrangement of the gage-wheel at the front end of the machine; to the provision of a gage-shoe at the side of said front end opposite the gage-wheel; the provision of a pivoted tongue or draft-pole whereby the machine is permitted a greater

freedom of movement, and to a novel construction and arrangement of the levers and carrying-wheels.

My improvements are shown in the accompanying drawings, in which—

Figure 1 is a plan view. Fig. 2 is a side elevation showing the main frame and supplemental frame raised as for transportation. Fig. 3 is an opposite side elevation. Fig. 4 is a plan view of the machine with the breaker and supplemental frame removed, and Fig. 5 is a detail showing the connection of the main and supplemental frame timbers.

In the drawings, let 6 represent the truck-frame and 7 the carrying-wheels thereof.

8 and 9 represent the longitudinal timbers of the main frame, which are arranged near together, the member 9 being provided with a clevis 10, to which the draft-animals may be attached when the supplemental frame is detached.

11 represents the scraper, which is arranged diagonally to the line of draft and cut and is secured to the main-frame member 12.

13 and 14 represent the rear main-frame members, and 15 an operator's platform.

The carrying-wheels for the front end of the machine are mounted on the longitudinal members of the main and supplemental frames in front of the scraper and behind the breaker-beam. A system of levers is provided whereby the frames can be raised and lowered with reference to the supporting-wheels so as to bring the scraper and breakers into contact with the surface or to raise them above the surface for transportation, as seen in Fig. 3. This system of levers in my present construction embraces the pull-rods 16, pivotally connected to the swinging levers 17, each having a stud 18, sliding within a slot or way 19 in the end of a lever 20, pivoted upon the bracket 21. The front end of the lever 20 is pinned to a sleeve 22, which forms a bearing for the extended shank or stem 23 of a wheel 24, said stem thus having a sprocket-bearing in the sleeve. The stem is provided with a collar 24^a, and the lower end of the sleeve is provided with a collar 24^b, bearing on the shank of the stem. By means of the rods 16 the levers 20 are tilted upon their pivots, thus causing the front end of the machine to be raised or lowered. The levers 20 recip-

rotate between the perforated guides 25, and by means of pins passed through these perforations the frame may be supported in the elevated position. The rods 16 are offset to provide the handles 16^a, whose extremities are guided in the stirrup and may be locked behind the shoulders thereof.

26 represents a gage-wheel whose axle is journaled in the angles of the pivoted arms 27 28, the latter having a quadrant-shaped member 28^a, which is perforated. The upper ends of the arms 27 28 are joined by a rod or round 29, and the gage-wheel may be fixed at any desired elevation by a pin passed through the perforated quadrant 28^a into the holes of a standard 30, secured to the front end of the framework. These arms, the axle, and the rod constitute a swinging frame, and a long axle may thus be used and suitably supported.

The supplemental frame consists of the front members 31 31^a and the member 32, so attached to the main frame that they may be disconnected therefrom. The rear end of member 32 has a hook-and-eye connection, and the members 31 31^a may be secured to the main-frame timber 9, as shown in Fig. 5. The breaker-beam is marked 33 and is provided with a series of blunt-pointed shovels 34, which are preferably detachably connected to the beam, thereby permitting them to be replaced by shovels or devices of other forms adapted to the particular work to be done. The breaker-beam is adjustably connected to the frame-timbers by brackets 35 and chains 36. Levers 37 are pivoted to the brackets 35; also at their extremities to the main frame. These levers afford means for raising and lowering the breaker-beam independently of the front end of the frame, so that it may be "set" to cut to any desired depth. The levers 37 may be pinned to slotted standards 38 after the adjustment is made. A driver's seat is shown at 40, adjustably mounted on the pole 41, said pole being pivoted at its rear end to the main frame and adapted to swing between the frame members 31 31^a. It is supported also by a caster-wheel 39. At the front end of the frame member 32 a gage-shoe 41^a is provided, the rear end of this shoe having a slotted plate 42, sliding over the stem of a set-bolt 43. A plow 44 is carried upon the main-frame timbers 8 and 9 between the breaker-beam and the point of the main scraper. The fender-rollers 45 are journaled on vertical pivots on the side of the machine to prevent injury by collision with the curbing of a roadway or other fixed obstruction.

The rear end of the main frame is adjusted vertically by means of a bell-crank 46, pivoted at 47 to the truck-frame, one of its arms having a roller 48 bearing upon the under side of the main frame. The upper end of the bell-crank is connected by a link 49 with the pull-rod 16, so that the adjustment of both ends of the main and supplemental frames may be effected simultaneously from the rear end of the machine.

This machine may be used for filling trenches, to grade earth-surfaces, or to spread paving materials. When employed for filling trenches, the breaker-beam and its frame are removed and the draft-animals will be attached to the main frame by the clevis 10. In grading under normal conditions in soft earth the plow makes the initial cut and determines the lateral limit of the grading, but where the surface material is hard the breaker-beam, provided with suitable plow-points, is employed, thus loosening hard earthy materials or stones preliminary to the action of the main scraper. The latter has a cutting edge, so that it will cut the surface, spreading the earth loosened by the plow-points and also that dislodged by the scraper itself. The plow in this work makes the initial cut and determines the side limit of the grading, while the main scraper levels the surface and provides a smooth track for the truck-wheels. The breaker-frame will also be employed where it is desired to spread paving materials, such as broken stone and the like, the shovels being of such form and material as to adapt them to the purpose. The supporting-wheels are located in the rear of the breaker-beam, so that they have a clear track, and also because the frame is thus supported near its middle, and consequently is more easily adjusted.

The adjustable gage-wheel 26 may be placed upon the outside of the framework upon the projecting end of its axle, as shown by the dotted lines in Figs. 1 and 4, and in this position travels on the curb when the machine is making its first traverse in preparing the subgrade for street improvements, the superfluous earth being removed previously to a depth of two or three inches above the proposed grade. The machine being properly set so as to determine the slope from the curb to the center line of the street the first cut is made adjacent to the curb. Following this operation the grading is done from the summit of the street with the gage-wheel on the edge of the curb, and the operator will by means of the levers control and adjust the machine so as to make the proper slope toward catch-basins or sewer-traps.

By the use of a single machine all of the operations of grading a street, the filling of trenches, and the spreading of the paving material may be effected rapidly and economically.

I claim—

1. In a machine of the class described, the combination with a main frame provided with a scraper, of a supplemental frame detachably connected with the main frame and a breaker-beam adjustably connected to the main frame and supplemental frame in front of the scraper, substantially as described.

2. In a machine of the class described, the combination with a main frame provided with a scraper and mounted upon a supporting-truck, of a supplemental frame provided with

a breaker-beam and a draft-pole or tongue pivoted to the main frame in the rear of the scraper and having suitable supports or guides on the supplemental frame for its swinging end, substantially as described.

3. In a machine of the class described, the combination with the main frame, a truck for supporting the rear end thereof, a scraper mounted on the main frame, a supplemental frame having a breaker-beam attached thereto, and supporting-wheels whose journals are slidably connected with the main frame and supplemental frame respectively, between the scraper and the breaker-beam, substantially as described.

4. The combination in a scraper and grader of a frame having a truck for supporting its rear end, and carrying-wheels on which the frame is adjustably mounted, a scraper located in front of the truck, a breaker-beam located in front of the supporting-wheels, said supporting-wheels having shanks or journals adapted to slide in bearings on the frame, levers connected thereto, said levers being pivoted upon the main frame and connections extending from the said levers to the rear of the frame whereby the levers may be rocked on their pivots and the front end of the frame raised and lowered, substantially as described.

5. A frame-tilting mechanism comprising in combination with the frame, supporting-wheels located between the ends of the frame, the journals of said wheels having a sliding bearing upon the frame, levers connected to

said extended bearings, said levers being pivoted between their ends, a pull-rod, and a swinging arm, having a slot-and-pin connection with the lever, substantially as described.

6. In a scraper and grader the combination with a frame, of a gage-wheel located at the front end thereof, a pivoted frame in which the gage-wheel is journaled, and the journal of said gage-wheel being extended laterally from the frame, whereby said gage-wheel may be mounted so as to travel within the limits of the frame or outside thereof, substantially as described.

7. In a scraper and grader the combination with the main frame, having a scraper mounted thereon, a supplemental frame having a breaker-beam mounted thereon, and an adjustable gage-shoe at the outer angle of said supplemental frame, substantially as described.

8. In a machine of the class described, the combination, with a main frame provided with a scraper and mounted upon a supporting-truck, of a supplemental frame provided with a breaker-beam, and a draft-pole or tongue pivoted to the main frame in rear of the scraper, extending forward of the supplemental frame, and there provided with a supporting caster-wheel, substantially as described.

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