

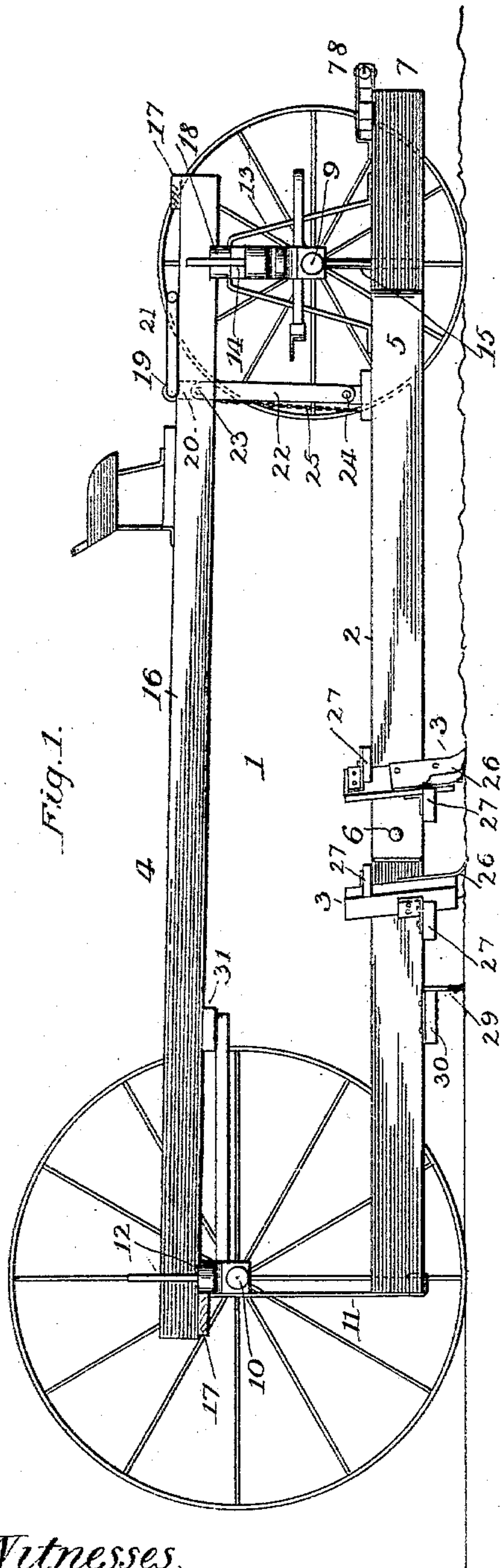
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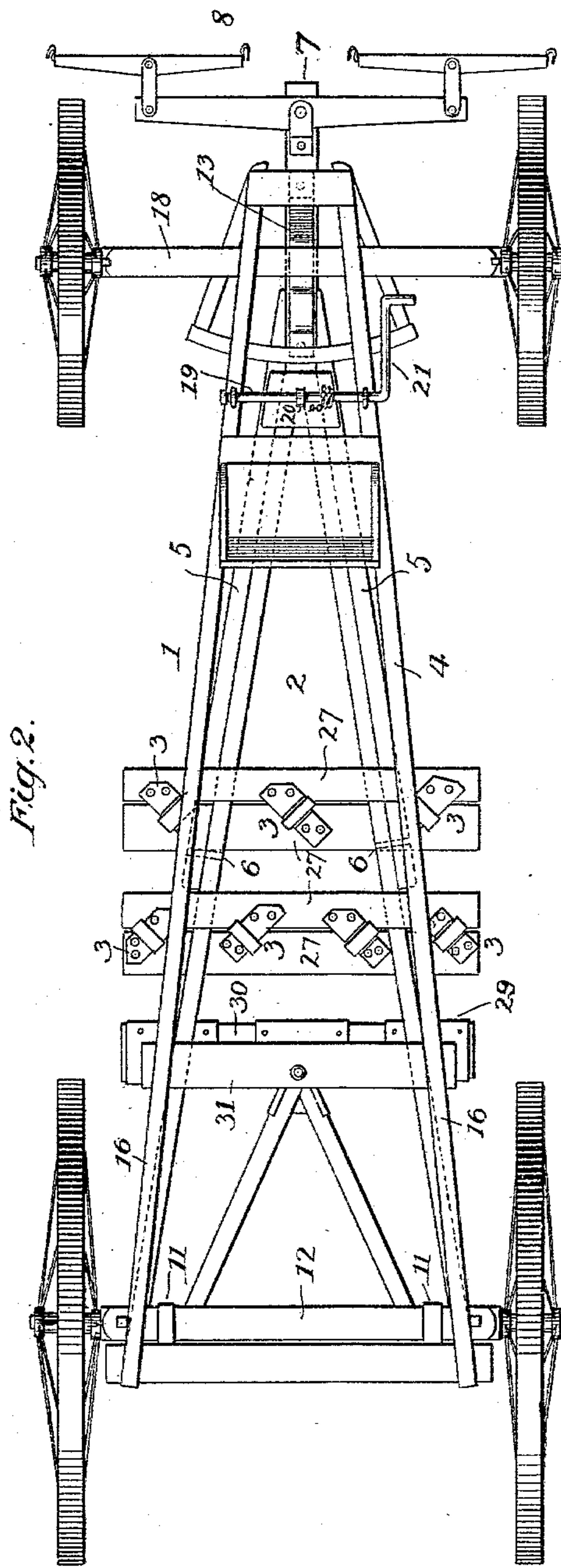
W. D. ARNETT.  
GRADING MACHINE.

No. 556,954.

Patented Mar. 24, 1896.



Witnesses.  
N. R. Kennedy  
J. S. Edmore.



Inventor:  
W. D. Arnett  
By Philip T. Lodge  
Att.

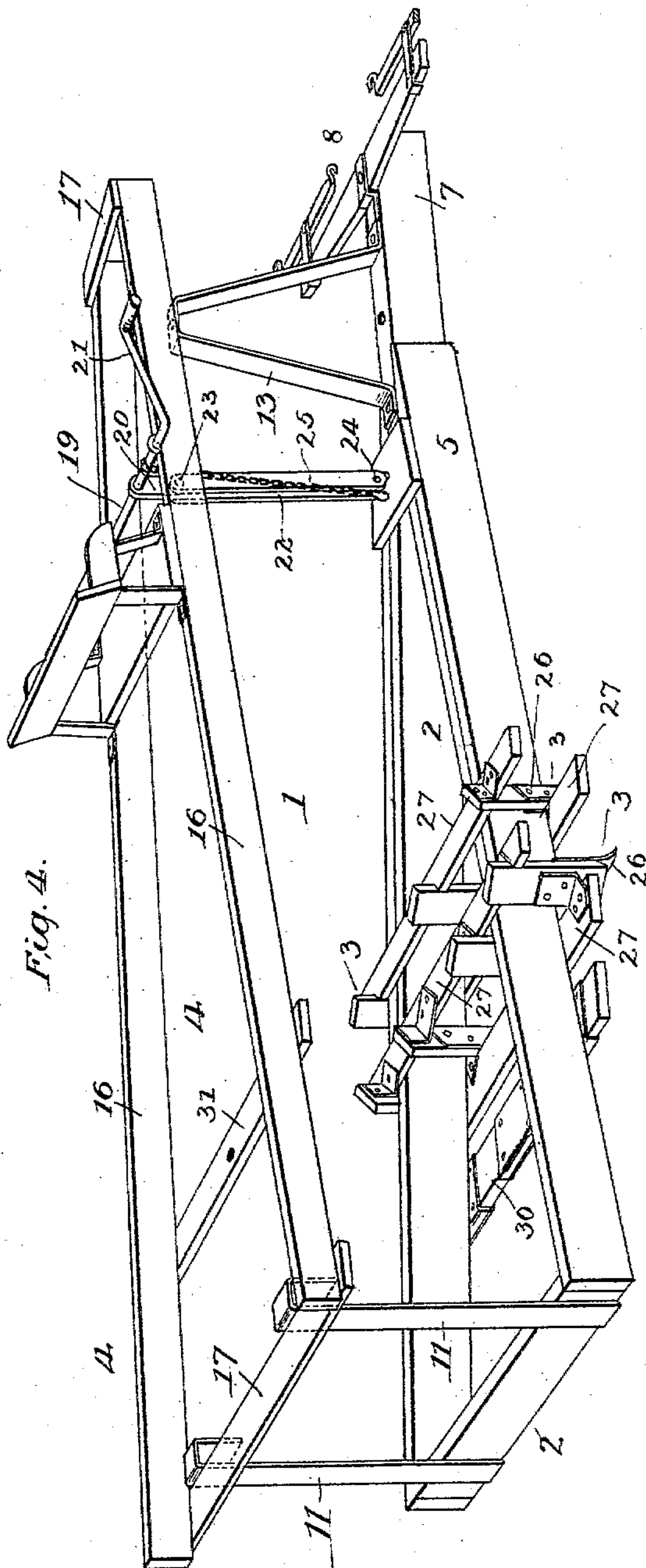
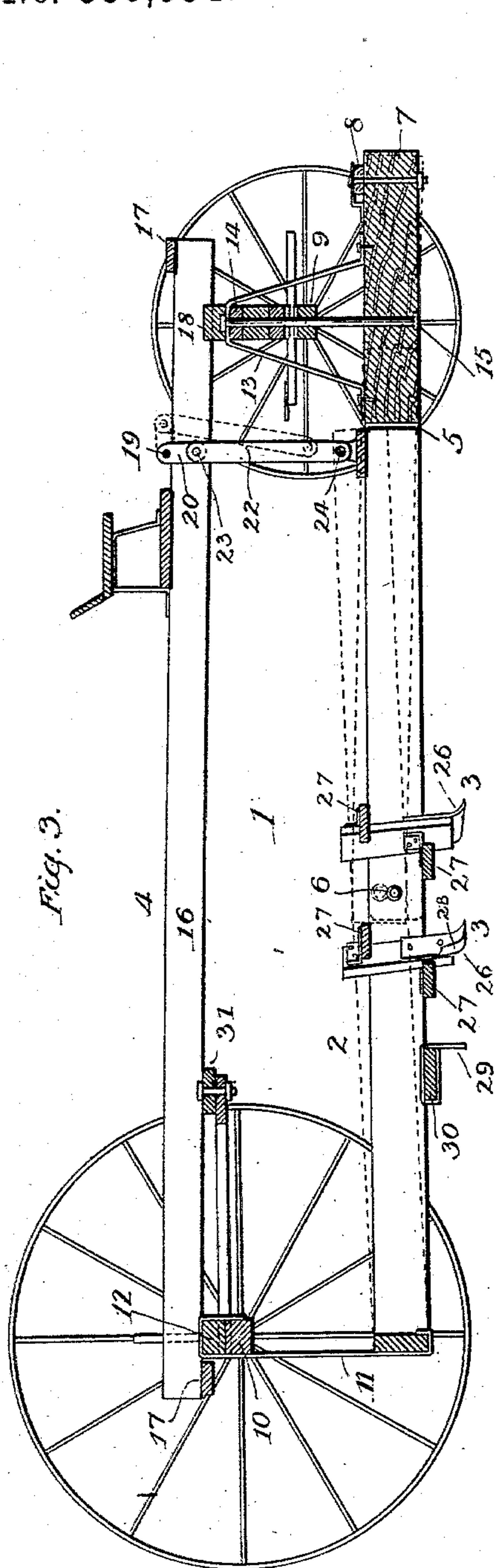
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# UNITED STATES PATENT OFFICE.

WILLIAM D. ARNETT, OF PARMA, IDAHO.

## GRADING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 556,954, dated March 24, 1896.

Application filed October 9, 1894. Renewed February 26, 1896. Serial No. 580,911. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM D. ARNETT, of Parma, county of Ada and State of Idaho, have invented a new and useful Improvement in Grading-Machines, of which the following is a specification.

My invention relates to grading-machines which are adapted to be drawn over the surface of the ground and which act to move the earth from the elevations into the hollows or depressions, such a machine forming the basis of a patent granted to me on the 12th day of April, 1892, and numbered 472,569. In the patent referred to is shown and described a machine embodying a frame provided on its under side with scrapers or plows adapted to act on the surface of the ground as the machine advances, the said frame being supported at its rear and front by runners. In the use of this machine it has been found that the runners interfere with its free movement, rendering it difficult of propulsion. The present invention is intended to overcome this objection by dispensing with the runners and substituting for the same sustaining-wheels, the construction of the frame and adjacent parts being such as to adapt the grader to be readily applied to the running-gear of ordinary farm-wagons, and this without the necessity of altering the gear of the wagon.

The invention in addition consists in various novel details of construction and combination of parts hereinafter described, the improvements in this respect being directed more particularly to the form of the frame, the devices for attaching the same to the wagon-gear, and the devices for controlling the vertical adjustment of the frame.

In the accompanying drawings, Figure 1 is a side elevation of my improved grading attachment as applied to the running-gear of an ordinary farm-wagon. Fig. 2 is a top plan view of the same. Fig. 3 is a longitudinal central section through the same. Fig. 4 is a perspective view of the attachment removed from the wagon.

Referring to the drawings, 1 represents my improved attachment, comprising a lower horizontal triangular frame, 2, provided about midway of its length with scrapers or plows 3, and an upper horizontal frame, 4. The lower frame is adapted to be sustained, as more fully described hereinafter, beneath the

two axles of a wagon-gear, while the upper frame is seated and secured upon the bolsters of the same, the said upper frame thus being adapted to give support to a driver's seat and suitable connections for adjusting the lower frame, as will be more fully described hereinafter. The lower triangular frame has its forward end or apex extended between two rearwardly-extending diverging bars 5, which are pivoted near their rear ends to the sides of the triangular frame on horizontal transverse axes 6. The forward ends of the diverging bars are fixed to the rear end of a draft-head 7, to the forward end of which a double-tree 8 for the attachment of the draft-animals is pivoted.

The parts thus described are suspended at opposite ends beneath the front and rear axles 9 and 10 of a wagon, which is accomplished in the following manner: At the rear end the triangular frame is provided with two vertical suspending bars or straps 11, having their upper ends in the form of forwardly-extending hooks, which are applied over the rear bolster, 12, while to the draft-head 7 is fixed a suspension-bracket 13, which passes over and is seated on the front bolster, 14, to which it is pivoted by a vertical bolt 15 extending through the bracket, the bolster, axle and draft-head. From this description it will be seen that the frame is suspended in a horizontal position adjacent to the surface of the ground beneath the two axles, the front axle being pivoted as usual to admit of the turning of the machine.

The upper frame, 4, before alluded to, is composed of two diverging side bars 16 connected at their front and rear ends by cross-bars 17. At their forward ends the two side bars of the frame are seated in sockets formed in the upper side of a transverse bar 18 seated upon the front bolster, being held in position by having its ends recessed to receive the stakes at the ends of the bolster. At its rear the frame is seated upon the rear bolster, the connecting cross-bar when the parts are in their proper positions extending closely against the rear bolster and the vertical suspending-straps and serving to hold the latter in place.

The driver's seat, before alluded to, is sustained near the forward end of the upper frame, in advance of which is journaled in suitable bearings on the frame a horizontal



shaft 19. At its center the shaft is provided with a short crank-arm 20, while on its end it is formed with a crank or lever 21 for turning the same. The end of this central crank-arm is pivoted between the upper ends of two vertical links 22 by means of a removable pin 23, which links are pivoted at their lower ends to the front end of the triangular frame, as at 24. The relative sizes and arrangement of the parts are such that when the crank-arm and connected links are in line vertically the triangular frame will be held in a horizontal position downward to its work, in which position of the parts the crank on the end of the shaft will extend forward in a horizontal position where it can be conveniently held by the foot of the operator. By means of these connections the forward end of the grader-frame may be adjusted to cause the plows to work at varying depths in the earth, according to the conditions encountered in practice. In order, however, that the scrapers may be raised to a higher elevation free of the ground when the machine is not in operation and being carried from place to place I provide an elevating chain or rope 25, having its lower end connected to the forward end of the grader-frame and its upper end fixed to the horizontal shaft 19. This chain is adapted to be wound on the shaft, which action will elevate the forward end of the triangular frame to the desired height, thereby lifting the scrapers above the surface of the ground. When it is desired to thus elevate the scrapers when the machine is not in operation, it will be necessary of course to disconnect the vertical links before described, which is effected by removing the pin 23. It is obvious that the elevating-chain will not interfere with the adjustment of the frame by means of the links.

The plows or scrapers before alluded to are preferably in the form of vertical blades 26, which are securely fixed in two rows or gangs to the edges of the upper and lower transverse bars 27, fixed to the upper and lower edges of the triangular frame. These blades or plows are arranged at an inclination, some to direct the soil inward and others outward. The rear edges are curved as at 28, which adapts them to retain for a time the loosened soil, thus permitting the same to gradually distribute in a uniform manner as the machine advances. In rear of the plows are arranged a series of vertical transverse leveling-blades 29, secured at intervals to a transverse bar 30 fixed to the under side of the triangular frame.

In applying my attachment to the gear of the wagon the body of the latter is first removed and the reach disconnected from the front axle. The two axles are then placed at the proper distance apart to correspond to the length of the grader-frame, which is usually about twenty feet, after which the upper and lower frames composing the attachment are applied to the axles, as herein-

before described, the forward end of the reach extending from the rear axle, being fixed to a transverse bar 31 secured to the upper frame.

Having thus described my invention, what I claim is—

1. The combination with the front and rear axles and their sustaining-wheels of the draft-head suspended at its forward end from the front axle and pivoted thereto on a vertical axis, the rearwardly-diverging bars extending from said draft-head, the triangular grader-frame suspended at its rear end from the rear axle beneath the same and having its apex pivoted within the rearwardly-diverging bars on a horizontal transverse axis, the upper frame sustained above the axles, and elevating devices connecting the forward end of the grader-frame with the upper frame.

2. The combination with the front and rear axles and their sustaining-wheels of the horizontal pivoted grader-frame suspended beneath the axles, the upper frame sustained by the axles, the driver's seat thereon, the transverse shaft journaled on the upper frame, the link detachably connected to said shaft and the pivoted grader-frame, and the lifting-chain connected at its end to the pivoted frame and shaft respectively.

3. The combination with the front and rear axles and their sustaining-wheels of the horizontal pivoted grader-frame suspended beneath the axles, the upper frame sustained above the axles, the driver's seat on the upper frame, the transverse shaft journaled in front of the driver's seat and provided with the crank-arm, a link removably attached to said crank-arm at its upper end and pivoted at its lower end to the pivoted frame, a lifting-chain connected at its ends respectively to the transverse shaft and to the pivoted frame, and an operating-crank on the end of the shaft.

4. The combination with the front and rear axles and the bolsters thereon, of the horizontal grader-frame situated beneath the axles, the two vertical suspending-straps connected at their lower ends to the rear end of the grader-frame and provided at their upper ends with hooks removably engaging over the rear bolster, a draft-head pivoted to the front of the grader-frame, a bracket connected to the draft-head and extending over the front bolster and pivoted thereto, an upper horizontal frame seated at its opposite ends on the two bolsters and suitable elevating mechanism sustained by the upper frame and connected to the front end of the grader-frame.

In testimony whereof I hereunto set my hand this 7th day of September, 1894, in the presence of two attesting witnesses.

WILLIAM D. ARNETT.

Witnesses:

FRED G. MOCK,

THOS. D. BABBITT.