

Feb. 14, 1933.

J. R. ROYER

1,897,677

TRACTOR DRAWN ROAD MAINTAINER

Filed Jan. 12, 1931

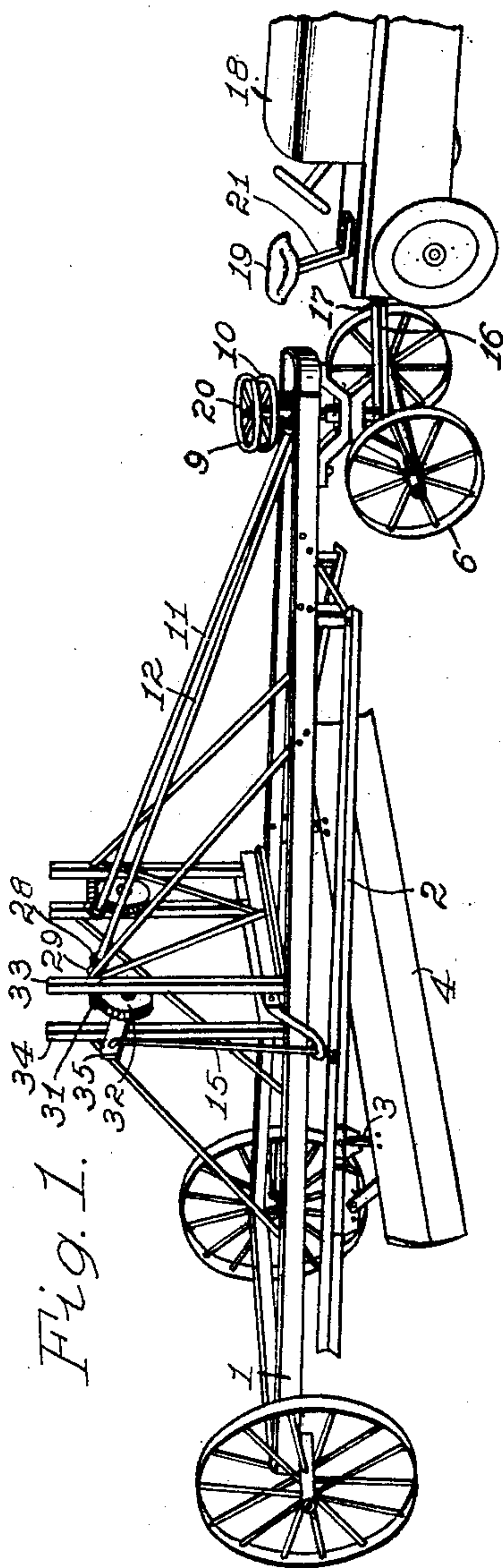


Fig. 1.

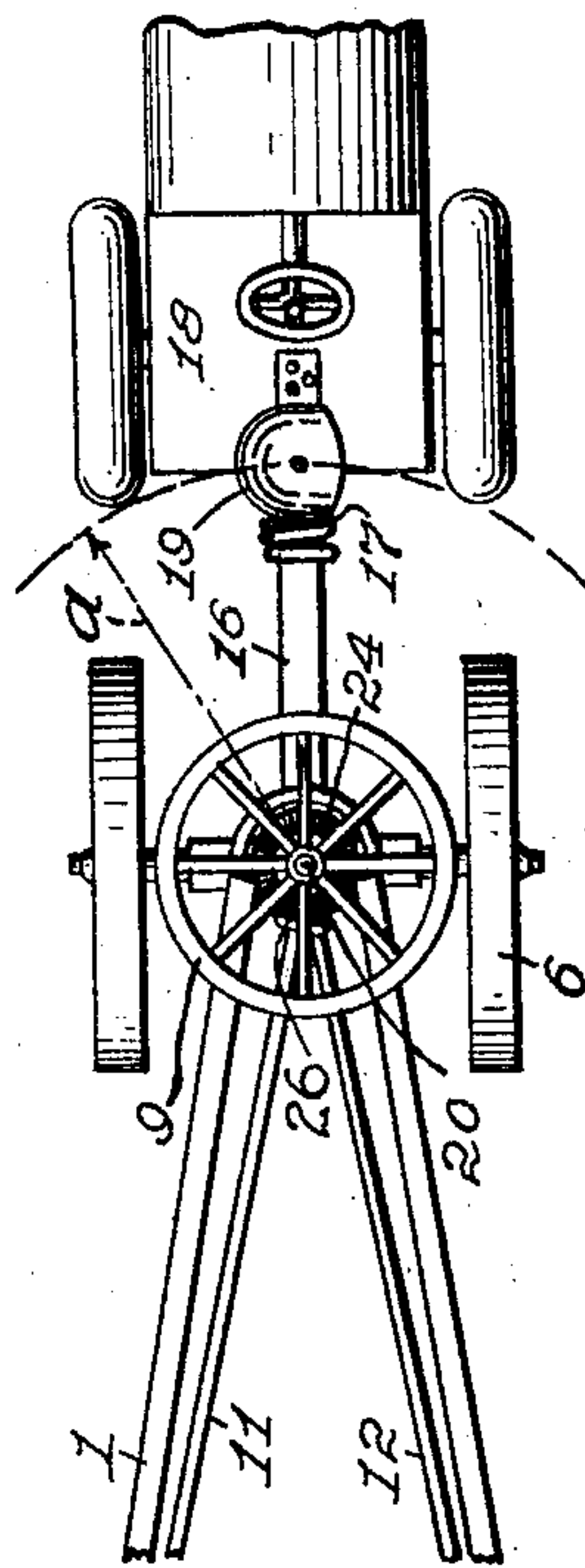


Fig. 2.

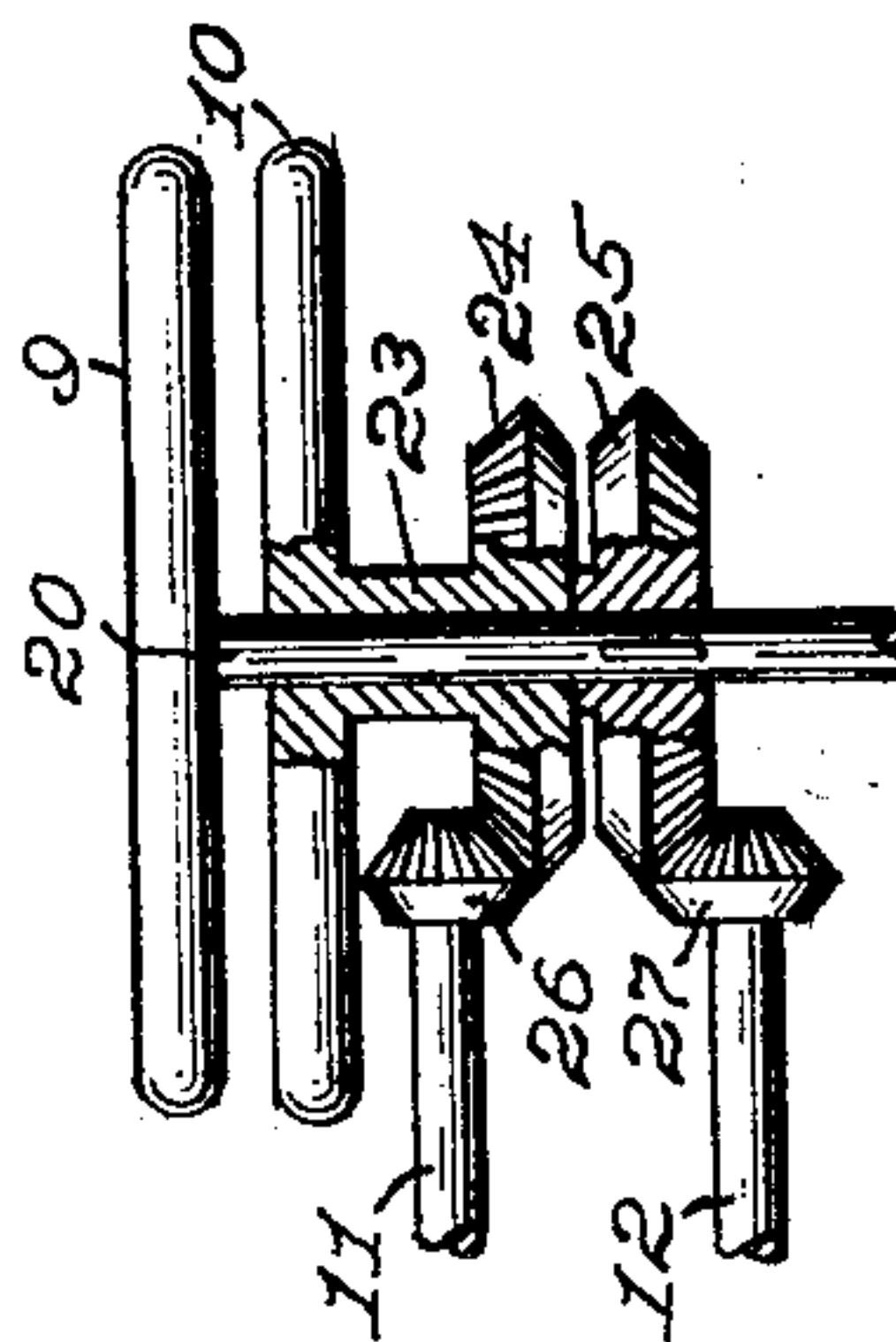


Fig. 3.

INVENTOR

Jesse R. Royer,
BY G. C. Kennedy,
ATTORNEY

UNITED STATES PATENT OFFICE

JESSE R. ROYER, OF JANESVILLE, IOWA

TRACTOR DRAWN ROAD MAINTAINER

Application filed January 12, 1931. Serial No. 508,076.

My invention relates to improvements in tractor-drawn road maintainers, and the object of my improvement is to provide means on a road grader, maintainer or the like, operable from a tractor hitched thereto, whereby a single person on the tractor may easily operate the tractor, while effecting manually through such means, without interference, positional adjustments of either end of the grader blade of the road maintainer, for economical practice.

This object I have accomplished by the means which are hereinafter described and claimed, and which are illustrated in the accompanying drawing, in which Fig. 1 is a perspective view of a connected tractor and road maintainer containing my improvement, and Fig. 2 is a fragmentary top plan of parts of both as linked by a draft connection. Fig. 3 is an enlarged detail side elevation, with parts in partial section, of the hand-wheels and the gears operated thereby.

Figs. 1 and 2 of the drawing show conventionally a tractor 18 having a draft connection 16 and 17 rigidly connected between it and the axle of the forward wheels 6 of a road grader or maintainer, the axle, in the usual manner being swingably mounted on a vertical shaft 20 depending from the forward end of the main frame 1 of the maintainer. The main frame 1 is supported on said forward wheels 6, and also on a pair of rear carrying wheels, and sub-frame members 2 are hung below the main frame at its forward end pivotally on hangers therefor, while the rear ends of the rearwardly divergent parts of the sub-frame 2 are hung for vertical adjustments and regulation on the main frame.

The main frame 1 has fixed longitudinally spaced pairs of like standards 34 and 33, on opposite parts thereof, and each of said pairs has a shaft rotatably mounted on and therebetween carrying a worm-wheel 32. A worm 31 is in mesh with each worm-wheel 32 and has on its inner end a bevel-gear 29 in mesh with a bevel-pinion 28 on a forwardly directed shaft, the shafts numbered 11 and 12, convergent forwardly and having on their forward ends, as shown in said Fig. 3, bevel-pinions 26 and 27 respectively, the pinion 11

being uppermost, and the said pinions are in respective mesh with bevel gears 24 and 25, mounted on the steering shaft 20 at the forward end of the frame 1.

This axle is thus swingable horizontally on the frame 1.

The rear parts of the sub-frame members 2 are suspended by means of links 15 connected pivotally at their upper ends to laterally projecting rock-arms 35 whose inner ends are fixed to the worm-wheels 32. A grading implement 4, is suspended by hangers 3 near its ends to the members of the sub-frame 2. The bevel-gear 25 is splined to the shaft 20, which carries at the top the hand-wheel 9, but the hand-wheel 10 below the hand-wheel 9 has a hub part 23 rotatable on the shaft 20 and which hub is integral with the upper bevel-gear 24. Thus the hand-wheel 9 may be used to operate the bevel-gears 25 and 27 with the shaft 12, while the hand-wheel 10 is used to operate the bevel-gears 24 and 26 and the other shaft 11, in causing the links 15 to respectively lift up or down adjustingly and independently the opposite ends of the grading implement or blade 4.

It is to be understood that the means shown in Fig. 1, while a representation of such means on a road maintainer actually in successful employment, is merely a diagrammatic view. In fact, my invention may be used on other types of road graders or maintainers, by slight variations in the connecting mechanisms and without departing from the principle of the invention.

The tractor has the usual steering-wheel and also a driver's seat 19 on a support 21. Preferably, the seat 19 faces one side of the tractor for the convenience of the driver, who is thus easily enabled to manipulate the steering-wheel with one hand, while regulating the tilting of the blade 4 in manually rotating selectively either of the hand-wheels 9 or 10 with his other hand. Thus, a single person may perform both said offices, a saving of labor cost, inasmuch as in the usual practice, two men are required, to separately perform these services.

Fig. 2, where mechanical details are reduced to a minimum, shows by a radius α

and arc, both in dotted lines, the maintenance of relative position of the driver's seat 19 and driver thereon to the axis of the hand-wheels 9 and 10, which radius is invariable, no matter what is the lateral angular shifting of the tractor 18 in turning, and therefore the driver always can manipulate said hand-wheels without difficulty, interference, or change of position in reaching. The draft connection 16 thus serves as a radius-rod for the purpose of swinging the forward wheels 6 of the maintainer in turning. As the hand-wheels are spaced but a short distance apart, the driver's hand reaches any portions of the rims of either easily, as neither hand-wheel is interposed between the driver and the other hand-wheel when the tractor is shifted angularly laterally as is the case when vertically disposed hand-wheels mounted on a horizontal axis on the road maintainer are used.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is:

1. In apparatus of the character described, in combination, a wheel supported frame, a steering-member therefor, a pair of substantially horizontal superposed hand-wheels adjacent said steering-member, a grading implement supported on said frame for vertical and tilting adjustments, and connecting mechanisms between said hand-wheels respectively and opposite ends of said implement to independently raise and lower said ends.

2. In apparatus of the character described, a tractor, a road maintainer mounted for transportation adjacent thereto, a draft connection therebetween, a steering wheel on the tractor, a pair of hand-wheels, separately rotatable about a common axis and positioned adjacent the tractor on the road maintainer, a driver's seat positioned between the steering-wheel and the road maintainer on the tractor, carrying-wheels mounted below the road maintainer hand-wheels and swingable about the aforesaid common axis, said draft connection being connected with said wheels, a road treating implement mounted under and supported on the road maintainer for vertical tilting adjustments, and like independent power transmission devices connected from said hand-wheels respectively to opposite parts of said implement for independently lifting or lowering said parts.

3. In apparatus of the character described, in combination, a road maintainer structure supported on carrying wheels at its forward and rear ends, the forward wheels being swingably mounted on a vertical axis, a tractor adjacent said structure having a radius-rod draft connection to said forward wheels, and having a steering-wheel, substantially horizontal slightly spaced hand-wheels for independent rotation relatively to said axis on said structure, a grading implement of

elongated form mounted movably below said structure, like independent power transmission devices connected operatively between said hand-wheels and opposite end parts of said implement, whereby either end of the implement may be separately only lifted or lowered, and a driver's seat mounted on the tractor between the steering-wheel and said pair of hand-wheels, spaced from both for ease of manipulation of either.

4. In apparatus of the character described, in combination, a tractor, a road maintainer having an angularly movable rigid hitch-connection to said tractor, the maintainer having a grader blade movably supported thereon, independently selectively rotatable vertically spaced horizontal hand-wheels on said maintainer adjacent said hitch-connection, and operating connections between the hand-wheels respectively and one or the other of the opposite end parts of said blade, for independently raising or lowering the ends of the blade.

5. In apparatus of the character described, in combination, a tractor having a terminal seat facing laterally, a road maintainer having a terminal rigid and swinging hitch-connection to the tractor-end having said seat, a grader blade below said maintainer, independently selectively rotatable uniaxial vertically spaced horizontal hand-wheels on the maintainer above the rear end of said hitch-connection, and operating elements connected between said hand-wheels respectively and an associated end part of the grader blade, whereby either end of the blade may be raised or lowered independently of the other end, the hand-wheels being manually accessible from the tractor seat for noninterfering selective operation of either wheel independently of the other.

In testimony whereof I affix my signature.
JESSE R. ROYER.

110

115

120

125

130