

No. 661,294.

Patented Nov. 6, 1900.

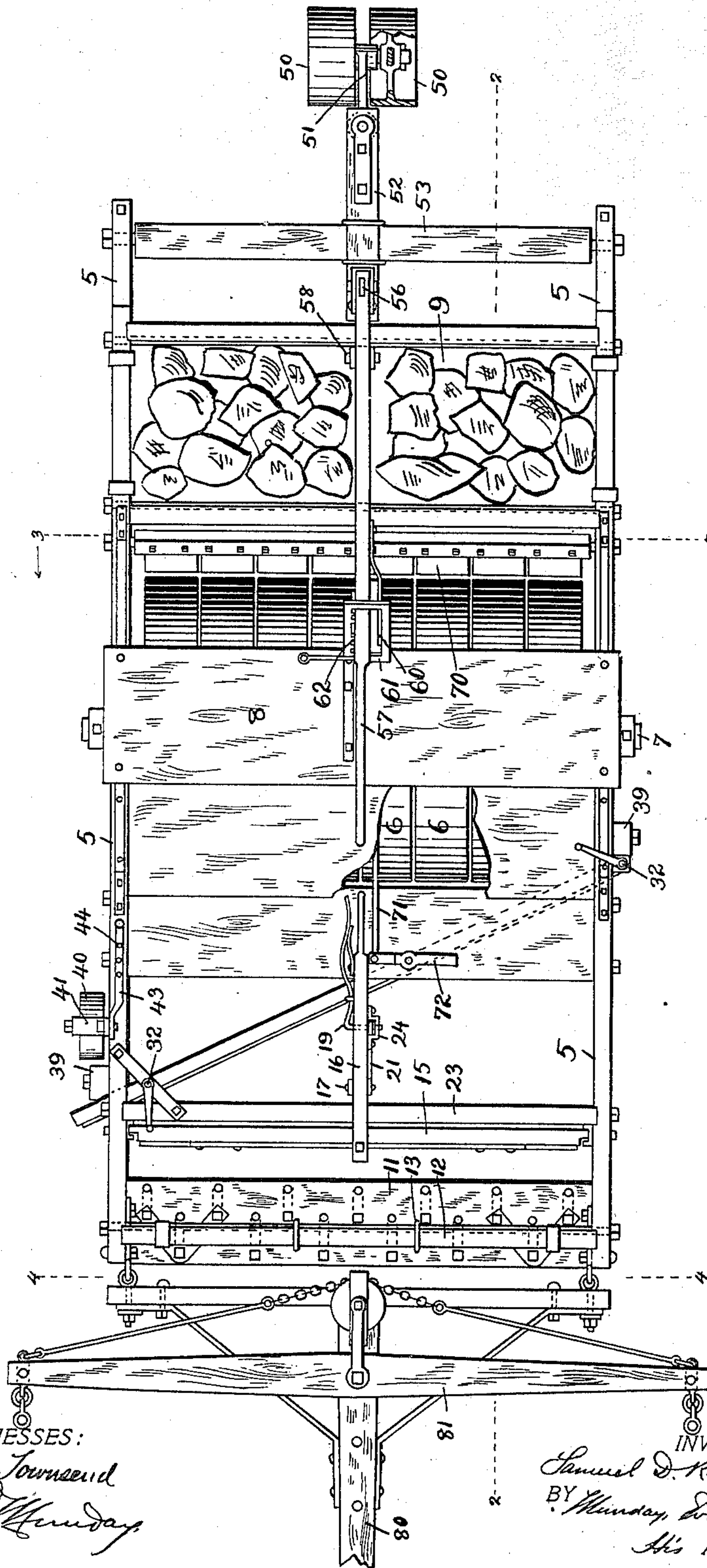
S. D. REYNOLDS.
ROAD GRADER.

(Application filed June 30, 1900.)

(No Model.)

3 Sheets—Sheet 1.

FIG. 1.



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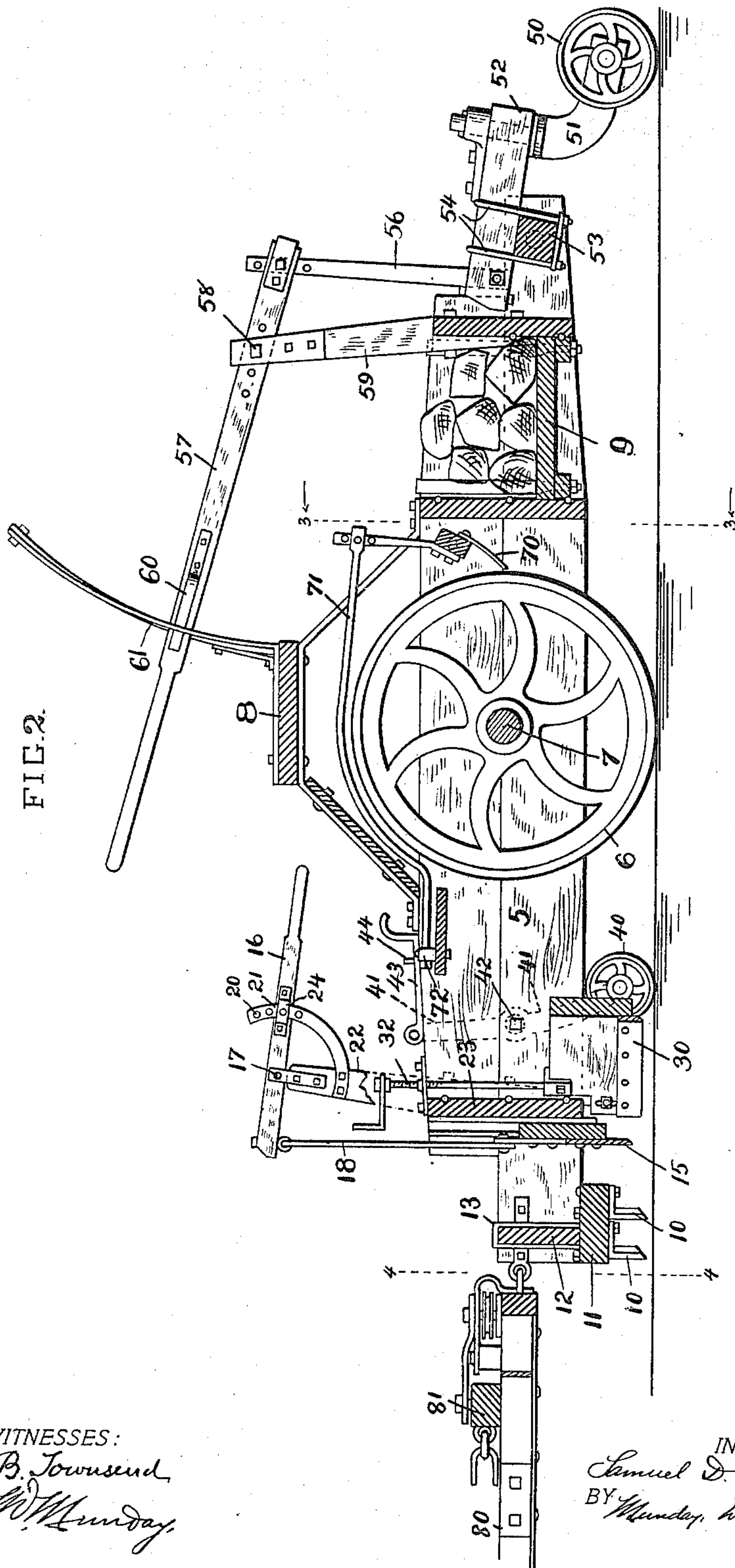
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FIG. 4.

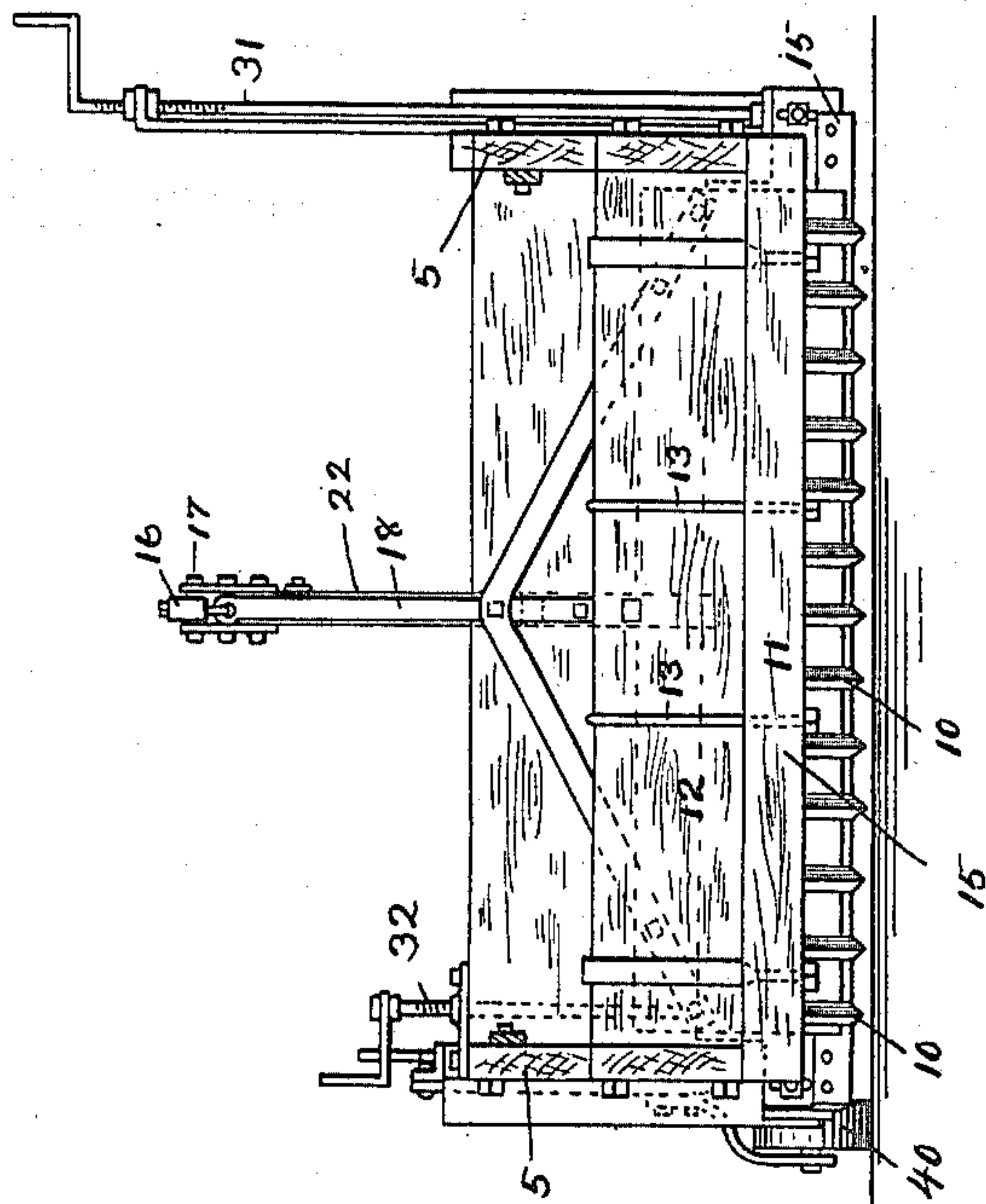
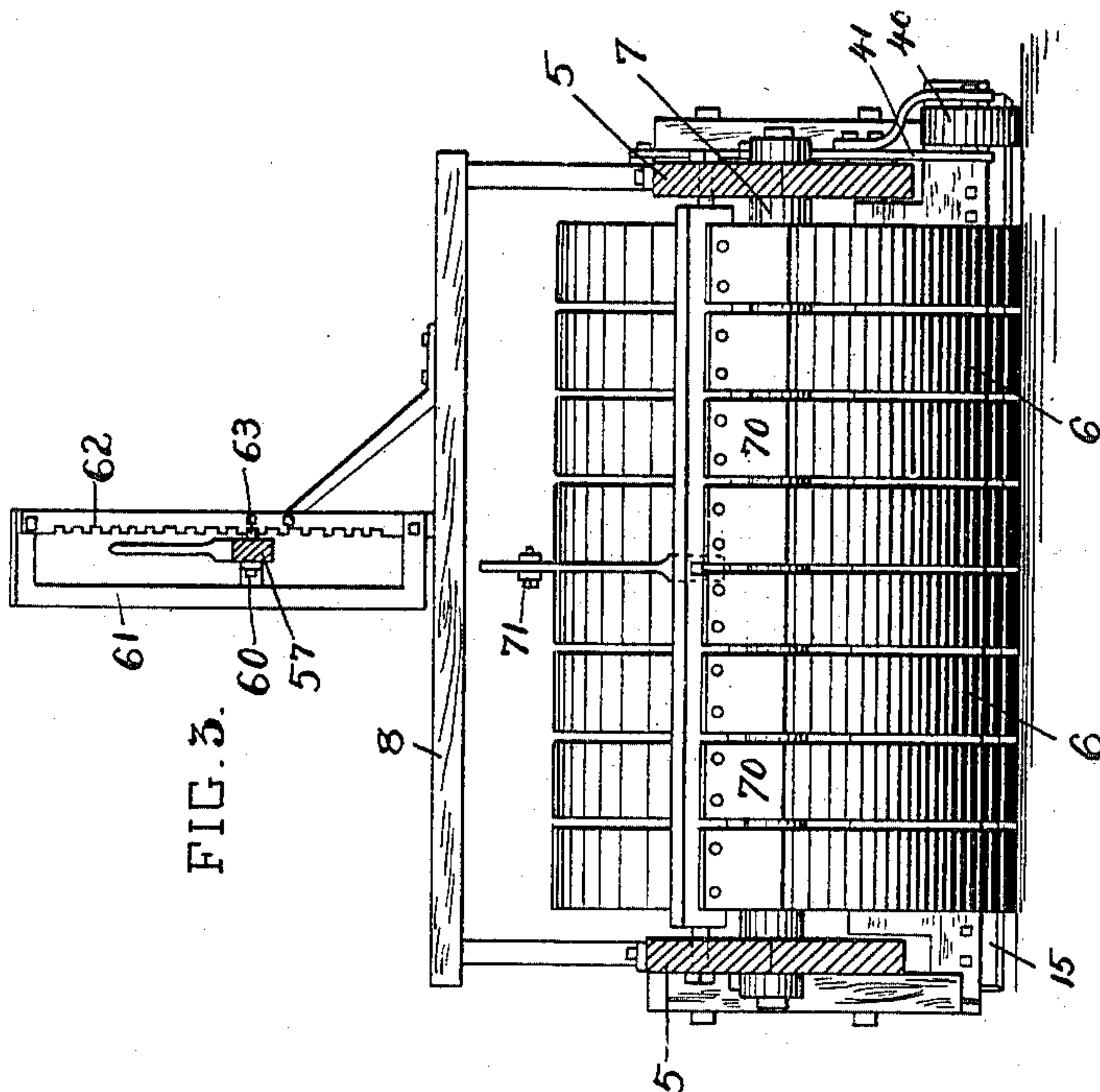


FIG. 3.



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UNITED STATES PATENT OFFICE.

SAMUEL D. REYNOLDS, OF DE KALB, ILLINOIS, ASSIGNOR TO JOHN G. DAVY, HENRY B. HOYT, ANDREW G. JOHNSON, AND LEWIS POOL, OF SAME PLACE.

ROAD-GRADER.

SPECIFICATION forming part of Letters Patent No. 661,294, dated November 6, 1900.

Application filed June 30, 1900. Serial No. 22,140. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL D. REYNOLDS, a citizen of the United States, residing in De Kalb, in the county of De Kalb and State of Illinois, have invented a new and useful Improvement in Road-Graders, of which the following is a specification.

My invention relates to improvements in road graders and finishers. Its object is to furnish a machine for both grading and finishing, but which will be specially useful in finishing. It is adapted to cut and trim off all high places and hummocks, also to fill all holes, sags, and low places, making a smooth even surface, and also to keep the road-bed well rounded and to finish the work by means of very heavy rollers. The machine is easily handled by one man.

In my invention the frame of the machine, which carries the grading or leveling devices, is balanced on the large rollers, so as to render the leveling devices capable of adjustment by simply rocking the frame on said rollers. The rear end of the frame is weighted, so as to overbalance the front end, thus throwing enough weight on the trailer or governing wheel to hold the latter firmly on the ground; but the weighting is not sufficient to cause the rocking adjustments of the frame to be hard or difficult, but, on the contrary, the frame can be very easily raised or lowered by the lever, as hereinafter described, and the leveling devices can also be held hard down when at work by the same lever acting in conjunction with the governing-wheel to elevate the rear of the frame.

Another of the main objects in this invention is to render the operation of the machine even and uniform and less likely to be affected by the unevennesses of the ground to be leveled than prior constructions. This object I accomplish by locating the supporting and governing devices back of the scraping or leveling devices, the supports thus moving always over ground which has been leveled, and thus keeping the machine uniformly and steadily at work on the same level and preventing jumping, skipping, and dipping of the leveling devices and insuring their being carried straight ahead at whatever pitch the operator chooses.

These and other features of the invention will be fully understood from the accompanying drawings, in which—

Figure 1 is a plan of the invention, and Figs. 2, 3, and 4 are sections on the lines 2 2, 3 3, and 4 4, respectively, of Fig. 1.

In said drawings, 5 5 represent the side frames of the body of the grader, supported centrally upon a series of large heavy rollers 6 6, mounted side by side upon the axle 7. The driver is furnished with a seat 8 over these rollers. In the rear of the body is a box 9, adapted to hold stone or sand to weight the machine down, if that is necessary. At its forward end the body is provided with a series of cutters or teeth 10, adapted to cut into and tear up the high ground which the machine encounters in its forward movement. These teeth are secured to a cross-beam 11, arranged horizontally and supported from another cross-beam 12, standing vertically and let into the side frames of the machine. The beam 11 is supported from beam 12 by straps 13, and the beam 12 is bolted to the side frames.

Back of the cutters is a scraper 15, extending across the front of the machine at right angles to the side frames and serving to fill the holes and low places with the dirt loosened up by the cutters. It is adjusted vertically by a lever 16, pivoted at 17 and connected to the center of the scraper 15 by the rod 18, and its ends move in grooves on the side frames. The lever is provided with a spring-catch 19, the front of which passes through the lever 16 into the holes 20 in a circular guide 21, attached to the upright arm 22, to which the lever is pivoted. This upright is attached to the frame cross-beam 23, and the lever 16 carries a clip 24, which embraces the guide 21, so as to keep it and the lever in proper relation to each other.

Next behind the scraper 15 is the diagonal scraper 30 for pushing the surplus dirt or gravel to one side. It extends also entirely across the machine in a diagonal direction and is vertically adjustable at one end by the operator while the machine is operating by means of the screw 31, located within easy reach of the driver while on the seat. The scraper is also adjustable at the other or forward end by a screw 32; but it is not expected

that the adjustment at this end of the scraper will be changed ordinarily while the machine is in operation. The scraper is suitably stayed at each of the side frames by blocks 39.

5 Immediately behind the forward end of the diagonal scraper is a supporting-roller 40, mounted upon the end of a lever 41, pivoted at 42 and controlled by a slide 43, having a series of holes adapted to receive a stationary
10 pin 44. By adjusting the slide 43 upon the holding-pin 44 the height of the roller may be changed slightly. It will be noted at Fig. 2 that the slide has a hooked end, tending to facilitate these adjustments. The main pur-
15 pose of this roller is the following: When the rear end of the diagonal scraper is raised, it tends to force the other end into the soil, and as the latter presents a sharp point it is apt to form a crease in the surface of the road-
20 bed. To obviate this creasing, I set the roller 40 so as to lift the scraper-point, leaving it near enough to move the loose dirt, but not so low as to cause the crease. This roller and the screw at the forward end of the scraper
25 should be adjusted with reference to each other so as to insure this result and generally before beginning work.

For regulating the depth of action of the scrapers I provide at the rear of the machine
30 a governing-wheel 50, journaled on an arm 51, swiveled in the end of rocking lever 52 and attached to a cross-beam 53 by straps 54. Said beam 53 is pivotally supported in the rear ends of the side frames 5 and is free to
35 rock on such pivots. At its forward end the lever 52 is attached by a rod 56 to a hand-lever 57, pivoted at 58 upon the upright 59 and controlled by the driver. This lever is provided with a spring 60 and moves up and
40 down in a rectangular frame 61, on one side of which is a rack 62, toward which the spring constantly presses the lever. The lever also carries a pin or projecting point 63, adapted to engage the teeth of the rack and lock the
45 hand-lever in any position to which it may be moved. The frame 61 is curved, as shown at Fig. 2, to enable the pin to engage the rack in any position of the lever. By means of the lever 57 the operator, it will be seen, can
50 readily change the depth of the scrapers, inasmuch as the raising or lowering of the forward end of the lever 52 causes a vertical movement of the rear end of the grader, and as the grader tilts on the axle 7 a consequent
55 rise or fall of the forward end carrying the scrapers ensues. By means of this lever also the scrapers can be thrown wholly out of action when it is necessary to move the grader from place to place. I also provide the main
60 or heavy rollers with a cleaning device 70, adapted to remove adhering dirt. This device is supported on the end of a rod 71, attached at its forward end to a pivoted foot-lever 72, located where it can be conveniently
65 operated by the driver. By means of this foot-lever the cleaner can be thrown into ac-

tion whenever the dirt adheres unduly to the rollers.

From the foregoing the body of the machine, it will be seen, is a very strong and rigid
70 structure supported mainly from the axle 7, located near its center and rocking on said axle in the various adjustments of the scrapers, and the driver while seated on the machine may control the depth of action by
75 the scrapers at all times, holding the grading devices hard down while tearing up the uneven surface, or lifting them so they will merely smooth the road, or throwing them
80 up entirely out of action. The trailer governing-wheel always moves over ground which has been both leveled and smoothed while the machine is in action, and, in fact, all the supporting devices of the machine, including the
85 main rollers or roller and the supporting-roller 40, as well as the governing-wheel, move over ground which has been acted upon by the scrapers, and consequently the machine has very little up-and-down motion as com-
90 pared with previous machines, and the work done by it is therefore much more level and uniform than the work of the previous machines. The roller 40 may also be appropri-
95 ately termed a "governing-wheel," as it prevents the diagonal scraper from cutting too deep when at work.

The tongue and whiffletree for the attachment of the horses are shown at 80 and 81.

I claim—

1. The road-grading machine wherein are
100 combined a rigid tilting body, carrying a leveling device at its forward end, rollers by which the body is supported at its center, a trailer-wheel, and means whereby said wheel may cause the tilting of the body, substan-
105 tially as specified.

2. The road-grading machine wherein are combined a rigid tilting body carrying the scraper at its forward end, a smoothing roller or rollers by which the body is supported, a
110 governing-wheel joined to the rear of the body, and means whereby the governing-wheel may cause the tilting of the body, substantially as specified.

3. The grading-machine wherein the body
115 carries the leveling devices at its forward end, and is mounted upon a central support upon which it may tilt to regulate the depth of soil removed by the leveling devices, and is combined with devices including a rear govern-
120 ing-wheel, for effecting the tilting adjustments of the body substantially as specified.

4. The grading-machine wherein the body carries the leveling devices at its forward end, and is mounted upon a central support upon
125 which it may tilt to regulate the depth of soil removed by the leveling devices, and is combined with devices, including a rear governing-wheel and a rocking lever connecting the wheel and the body, for effecting the tilting
130 adjustment of the body, substantially as specified.

5. The grading-machine wherein the body carries the leveling devices at its forward end, and is mounted upon a central support upon which it may tilt to regulate the depth of soil removed by the leveling devices, and is combined with a rear governing-wheel, a rocking lever connecting the wheel and body, and means on the body for rocking said lever, substantially as specified.
- 5 6. The road-grading machine wherein are combined a rigid body, a smoothing roller or rollers on which the body tilts, leveling devices on the forward end of the body, a rear governor-wheel and mechanical connections between the body and the wheel, such connections being operable by the driver and enabling him to cause the the tilting adjustable of the body, substantially as specified.
- 10

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Witnesses:

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