

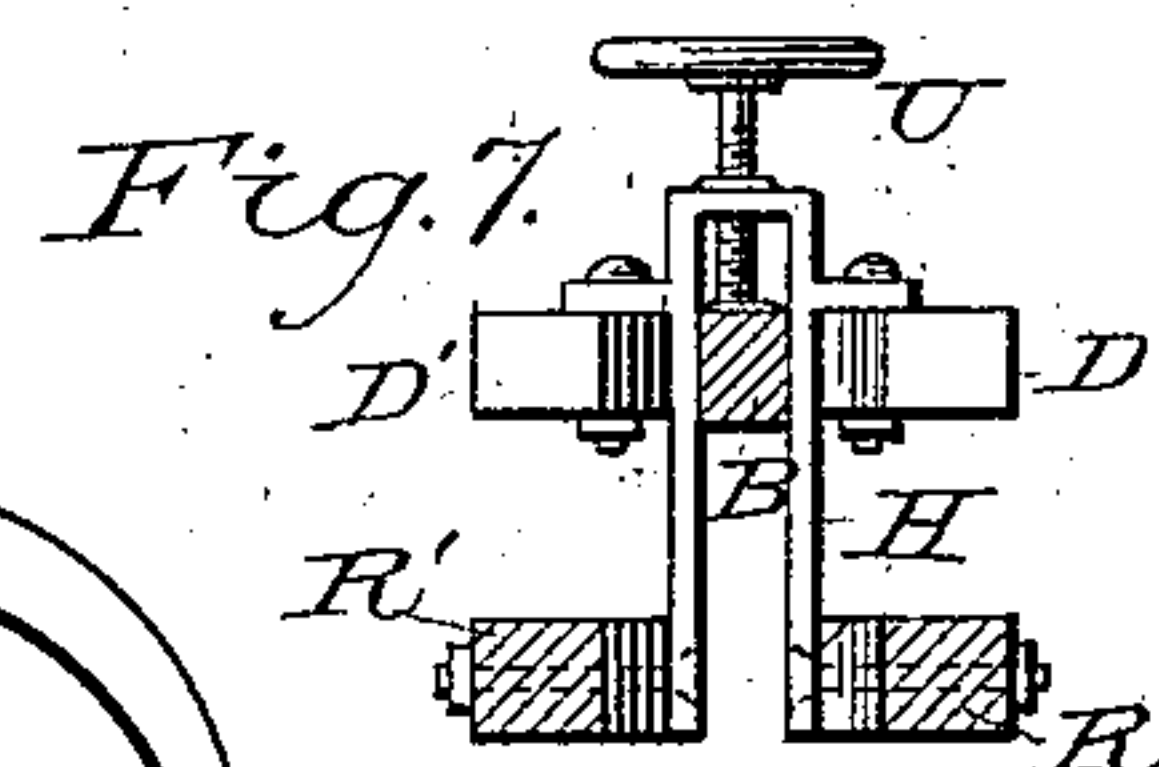
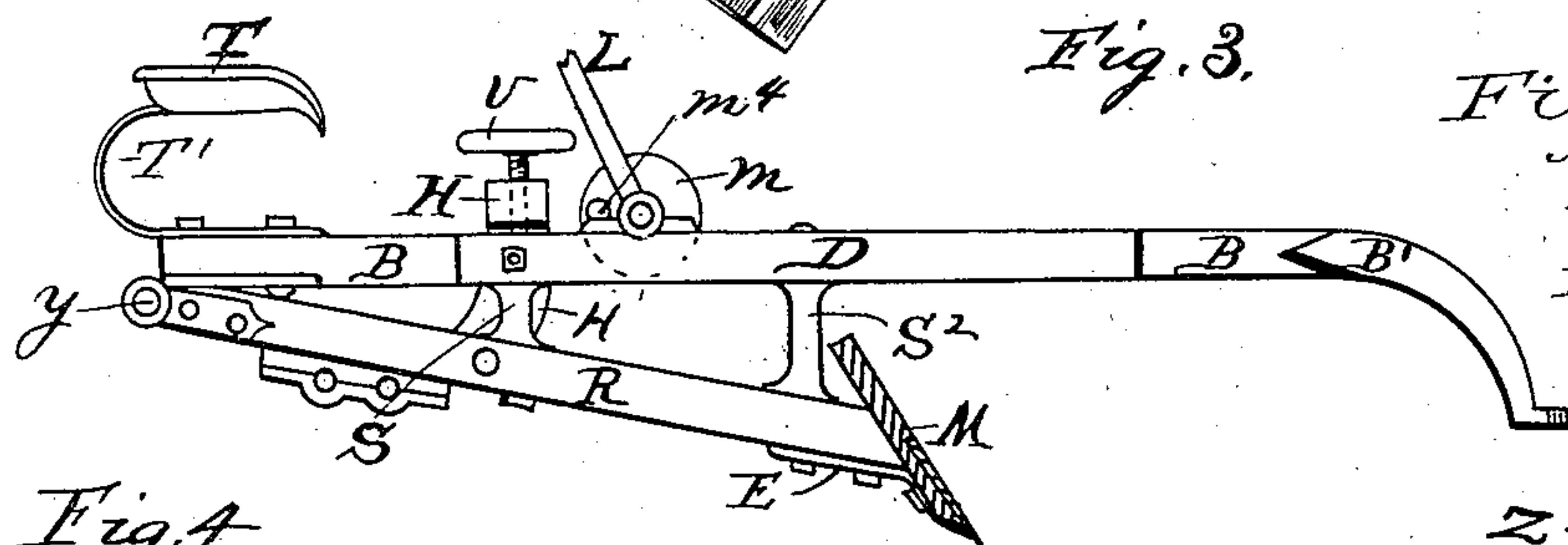
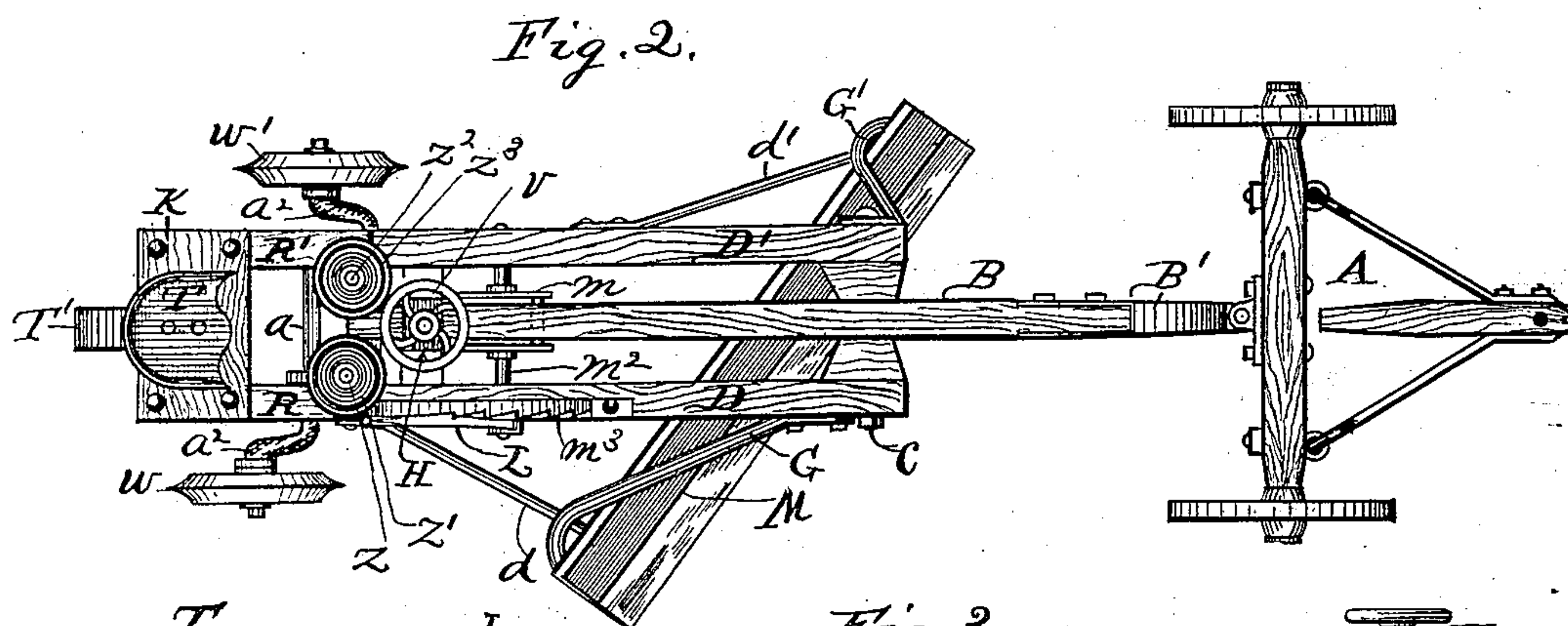
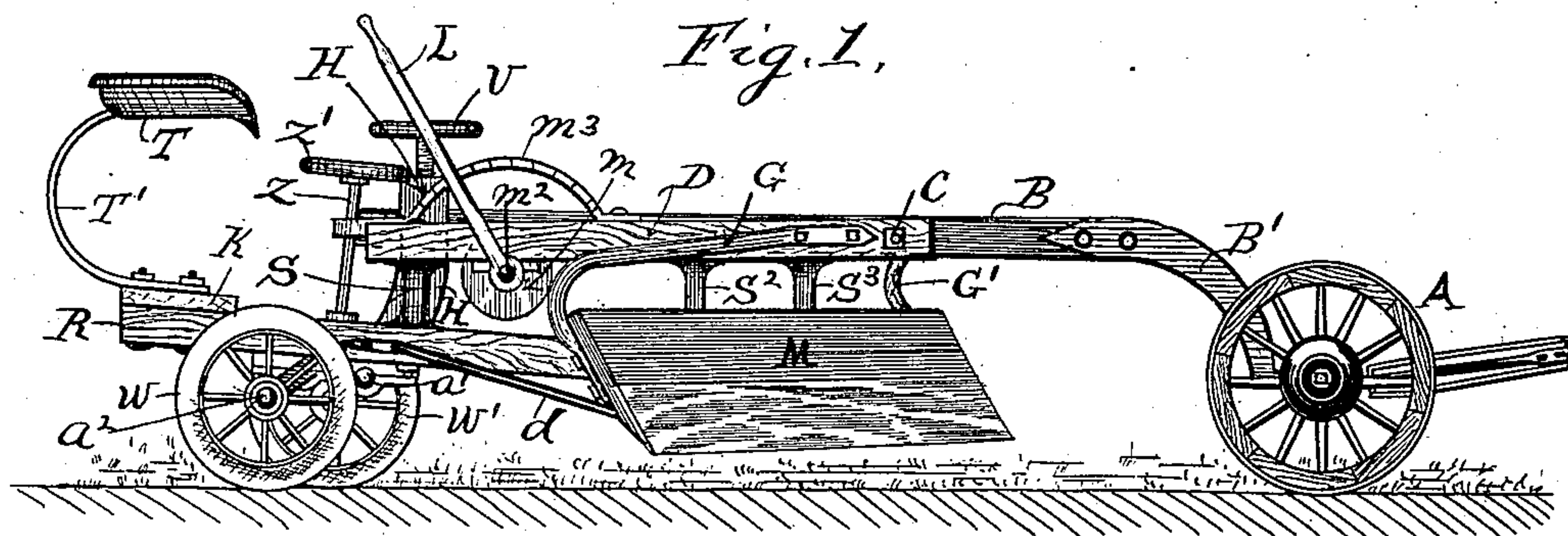
(No Model.)

A. V. PITTS.

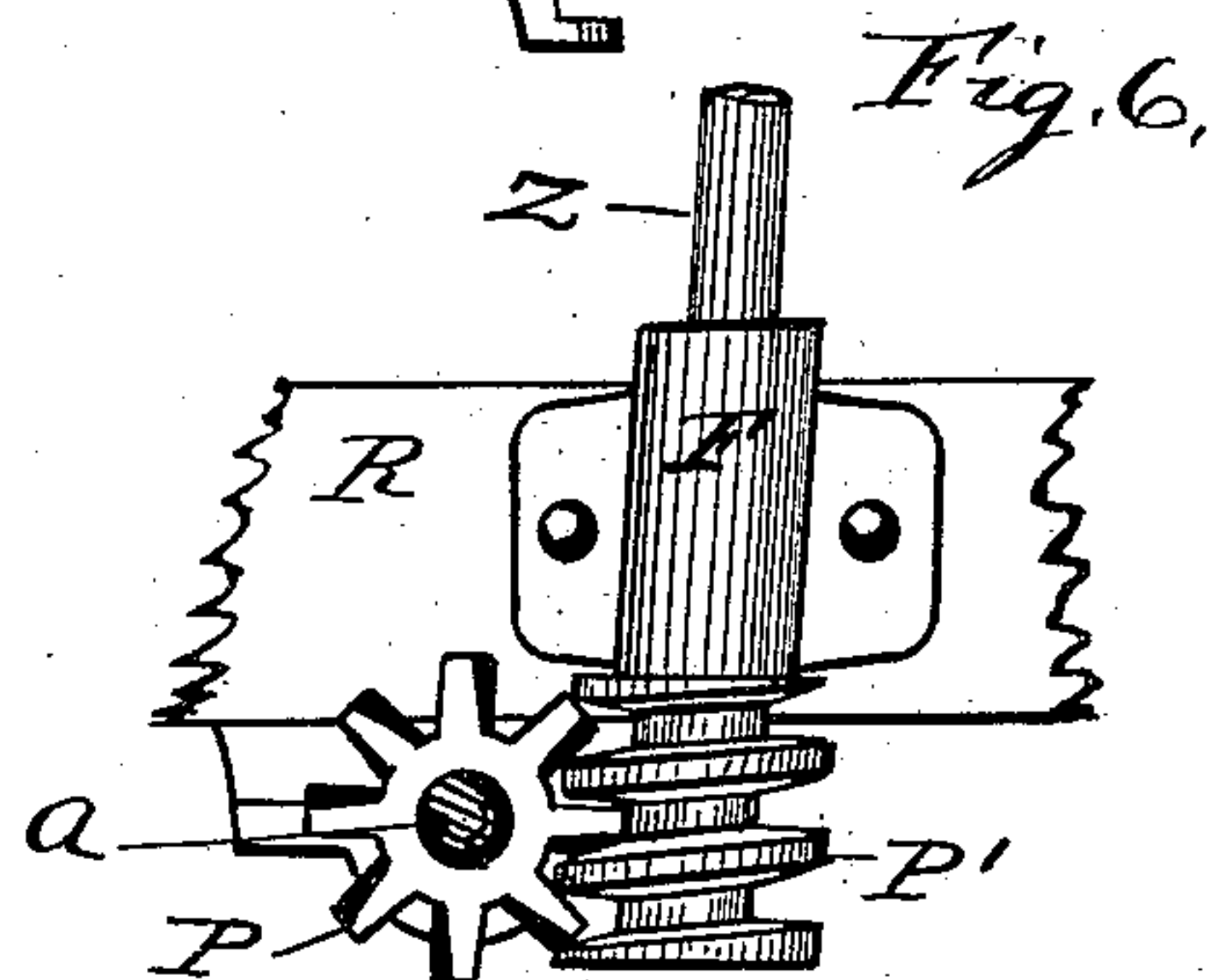
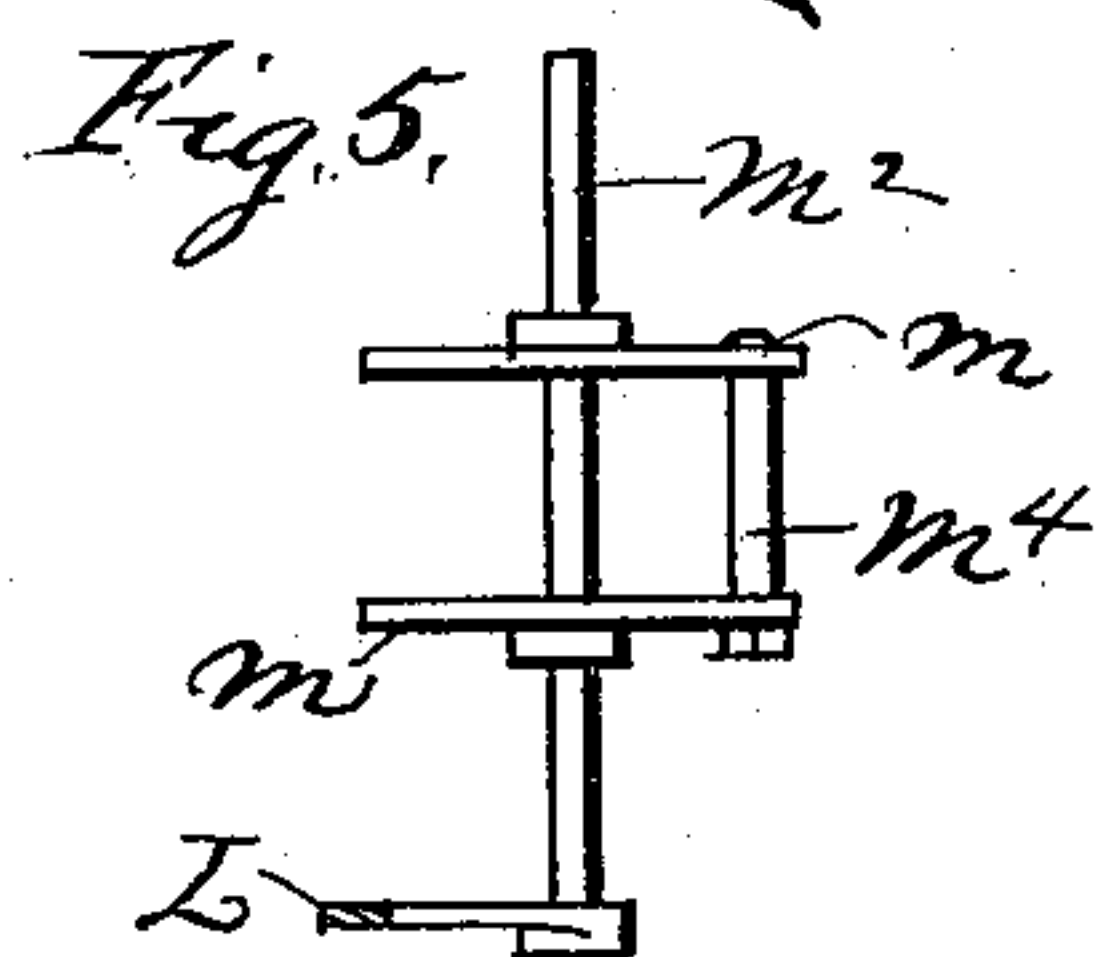
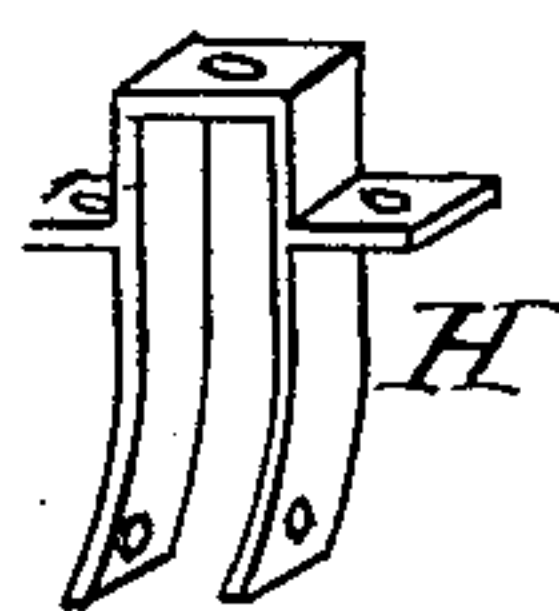
ROAD GRADER.

No. 342,808.

Patented June 1, 1886.



*Fig. 4.*



Witnesses

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# UNITED STATES PATENT OFFICE.

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## ROAD-GRADER.

SPECIFICATION forming part of Letters Patent No. 342,808, dated June 1, 1886.

Application filed August 25, 1885. Serial No. 175,281. (No model.)

*To all whom it may concern:*

Be it known that I, AURELIUS V. PITTS, a citizen of the United States of America, residing at Marseilles, in the county of La Salle and State of Illinois, have invented certain new and useful Improvements in Road-Graders, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to certain improvements in road-grading machines, which improvements are fully set forth and explained in the following specification and claims.

Referring to the drawings, Figure 1 is a side elevation of the grader. Fig. 2 is a top plan view of the same. Fig. 3 is a side view of the grader-frame and a cross-section of the scraper-board. Fig. 4 is a perspective view of the housing forming a guide for the rear part of the grader-tongue. Fig. 5 is a plan view of the crank and lever for raising the front end of the scraper-board. Fig. 6 is a detail view of the worm and worm-wheel mechanism for rotating the crank-axles of the grader; and Fig. 7 is a rear elevation of the housing forming a guide for the rear part of the tongue, showing the manner of its attachment to the sills and beams and the manner in which it vertically guides the rear end of the tongue.

30 R and R' represent the sills of the grader, connected at their rear ends by means of the seat-board K, and secured at their front ends to the rear side of the scraper-board M by means of angle-plates, as shown at E in Fig. 3, and having the crank-axles  $a$  and  $a'$  boxed to their under side, upon the cranked ends  $a''$  of which the traveling wheels W and W' are placed, as shown in Figs. 1 and 2, and upon which wheels said sills and the rear part of the machine are supported.

40 D and D' are a pair of parallel beams, supported immediately above sills R R' on standards, such as are shown at S S' S'' of Figs. 1 and 3. B is the tongue of the grader, located centrally between and parallel with said beams, and pivotally connected thereto, as shown at c in Fig. 1. The front end of said tongue terminates in the downwardly-curved eye-plate B', for pivotally connecting it to the two-wheeled forward supporting-truck, A, having wheels of small enough diameter to turn under said tongue to permit the grader to be turned

in a short space. H is a housing arranged vertically between the said sills and said beams, and secured thereto by means of proper bolts, 55 and forms a guide for the rear part of said tongue as it is moved vertically, as shown in Fig. 7. V is a screw arranged in the upper part of said housing, so as to engage with the upper side of said tongue, bear down on the rear end of said tongue, and thereby hold the scraper-board M down to its work when the machine is used in soil requiring such downward pressure of the scraper-board. In ordinary work the weight of the machine is sufficient to hold the scraper board down to its work. 65

M<sup>2</sup> is a shaft arranged across the machine under the tongue B, and boxed to the under sides of beams D D'. Upon said shaft is secured a pair of disks,  $m$   $m$ , one arranged on either side of the said tongue. These disks have a friction-roller,  $m^4$ , secured between them near their peripheries by means of a bolt passing through, as shown in Fig. 5, which friction-roller engages with the under side of said tongue. L is a hand-lever secured to one outer-end of said shaft, and arranged to engage with the toothed notched segment  $m^3$ , secured to the upper side of beam D. By moving lever 80 L backward, the shaft  $m^2$  and disks  $m$  will be partially rotated, so as to cause roller  $m^4$  to engage with the under side of said tongue to raise it, and thereby adjust the scraper-board vertically. The said lever may be held in any 85 desired position by means of the notched segment  $m^3$ . The crank-axles  $a$   $a'$  are each provided with a worm-wheel, such as is shown at P, Fig. 6, located at the inner side of the sills, and arranged to engage with and be rotated 90 by means of the worms P', secured on the lower ends of the vertical shafts Z, as shown in Fig. 6, boxed at F to the sills, as shown in said figure, and also to the beams, as shown in Fig. 1, by means of which worm and worm-wheel 95 mechanism the said axles may be partially rotated to elevate and lower the rear end of the machine.

Referring to Fig. 2, Z and Z<sup>2</sup> represent the upper end of the vertical shafts of the worm and worm-wheel mechanism, respectively provided with the hand-wheels Z' and Z<sup>3</sup>, for rotating them. 100

T is a driver's seat, arranged to be supported



on the spring-standard T', standing on seat-board K. This seat is arranged immediately in the rear of said hand-wheels and lever, so they are accessible to the operator without leaving it. The traveling wheels W and W' have sharpened peripheries to prevent their sliding sidewise on the ground.

G and G' are curved beams for connecting the outer ends of the scraper-board M to the beams D D', as shown in Figs. 1 and 2.

d and d' are braces to brace the outer ends of the scraper-board against the sills R R'. If desired, the tongue B may be hinged at its rear end to the rear ends of the sills R R', as shown in Fig. 3.

The scraper-board M is set diagonally across the under side of the machine, as shown in Figs. 1 and 2, so as to carry the earth to one side and throw it up toward the center of a road, and the machine is operated by means of a team or other power attached to the forward truck, A.

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

1. In the grading-machine shown and described, as a means for vertically adjusting the scraper-board and the rear part of the machine, the combination of the beams D D', tongue B, and sills R R' with the lever L, cranked friction-roller  $m^1$ , hand-shafts Z Z', each having a worm, P', crank-axles  $a$  and  $a'$ , each having a worm-wheel, P, arranged to engage worms P', and wheels W W', each having sharpened peripheries, substantially as set forth.

2. In the grading-machine shown and described, the combination of the beams D D', tongue B, pivotally secured between said beams, lever L of shaft  $m^2$ , arranged to give vertical movement to friction-roller  $m^1$ , notched

segment  $m^3$ , housing H, sills R R', having standards to support beams D D', and having angle-plates E, for connecting them with the scraper-board, scraper-board M, curved beams G G', for connecting the outer ends of said scraper-board with the frame, and the means, substantially as shown and described, for giving independent vertical adjustment to the rear end of the machine, substantially as set forth.

3. In the grading-machine shown and described, the worm and worm-wheel mechanism shown and described, for independently adjusting the sides of the machine, in combination with the lever and crank mechanism, as set forth, and tongue B, for vertically adjusting the scraper-board M, substantially as specified.

4. In the grading-machine shown and described, the housing H, centrally located and vertically arranged between the beams D D' and sills R R', and secured thereto as a guide for the rear part of the tongue B, and having the screw V, for holding down the tongue B to hold the scraper board down to its work, substantially as set forth.

5. In the grading-machine shown and described, the frame consisting of the combination of the beams D D', arranged to pivotally support and vertically guide tongue B, sills R R', having standards for supporting said beams, and angle-plates for connecting them with the scraper-board M, seat-board K, arranged to support a driver's seat and connect the rear ends of said sills, and the curved beams G G', for supporting the outer ends of the scraper-board, as and for the purpose set forth.

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Witnesses:

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