

No. 756,323.

PATENTED APR. 5, 1904.

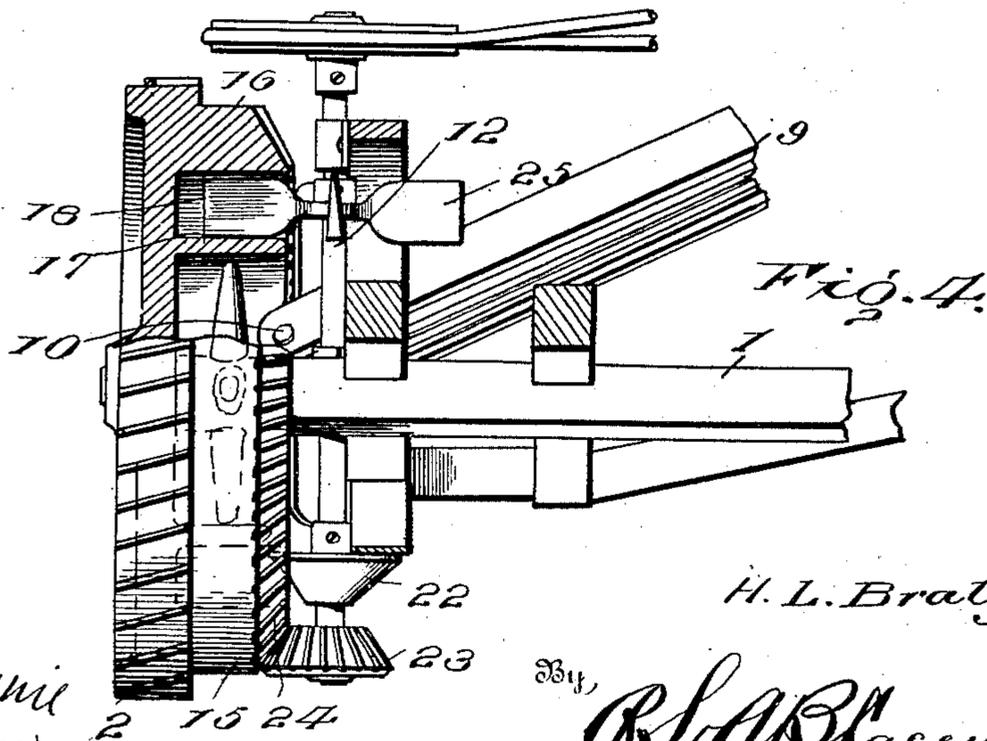
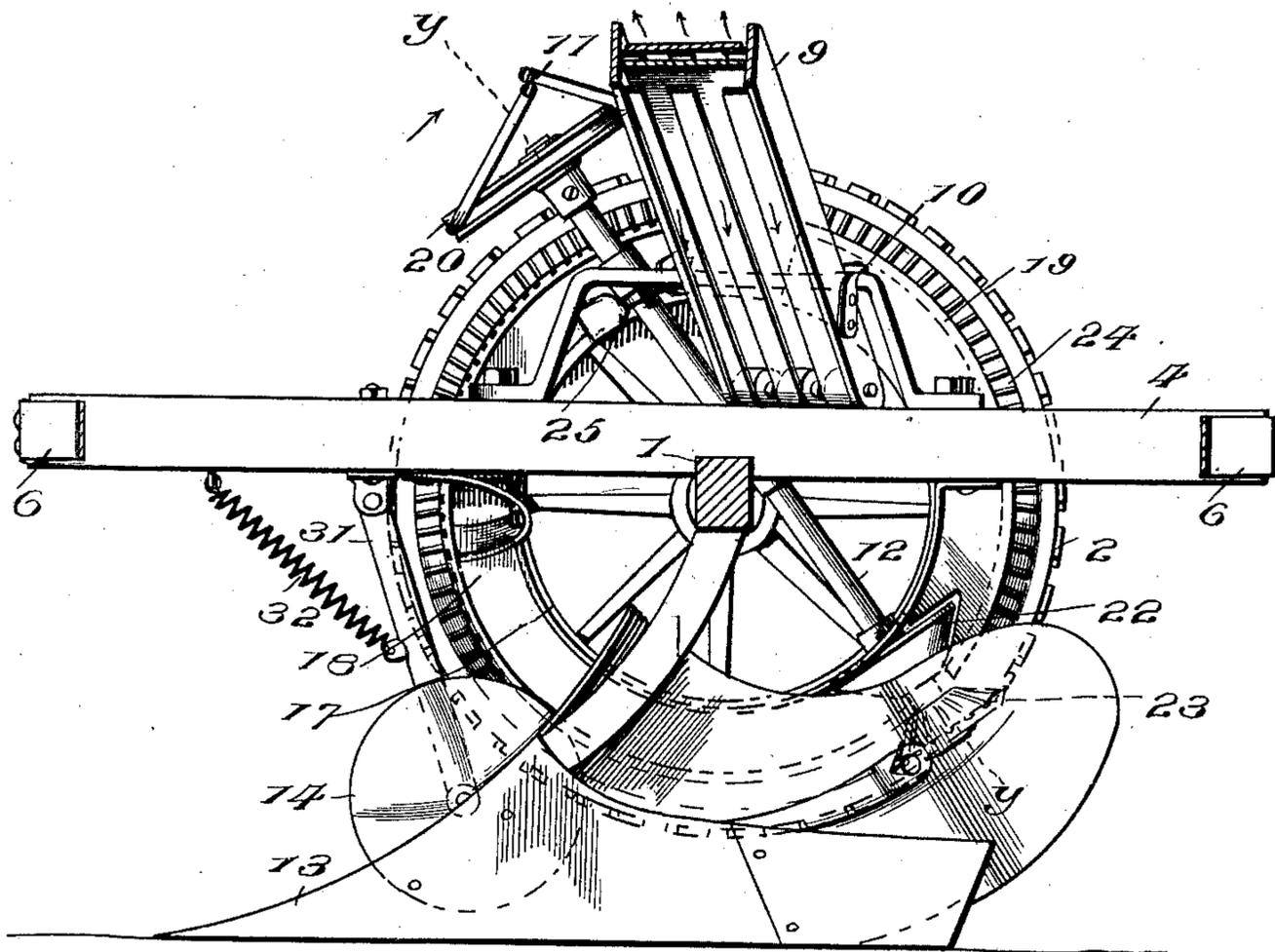
H. L. BRALY.
ROAD GRADER.

APPLICATION FILED JULY 6, 1903.

NO MODEL.

3 SHEETS—SHEET 1.

Fig. 1.



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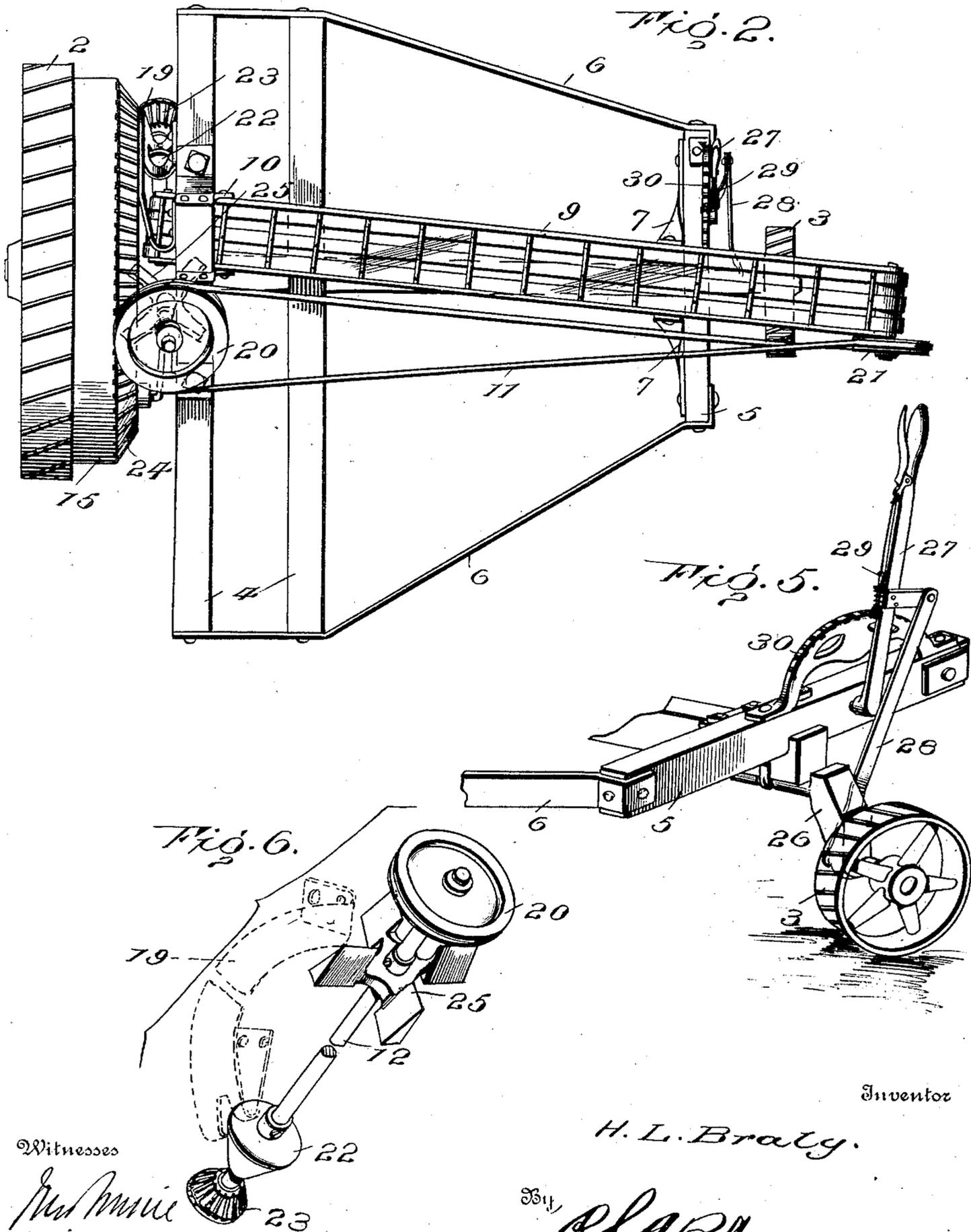
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3 SHEETS—SHEET 2.



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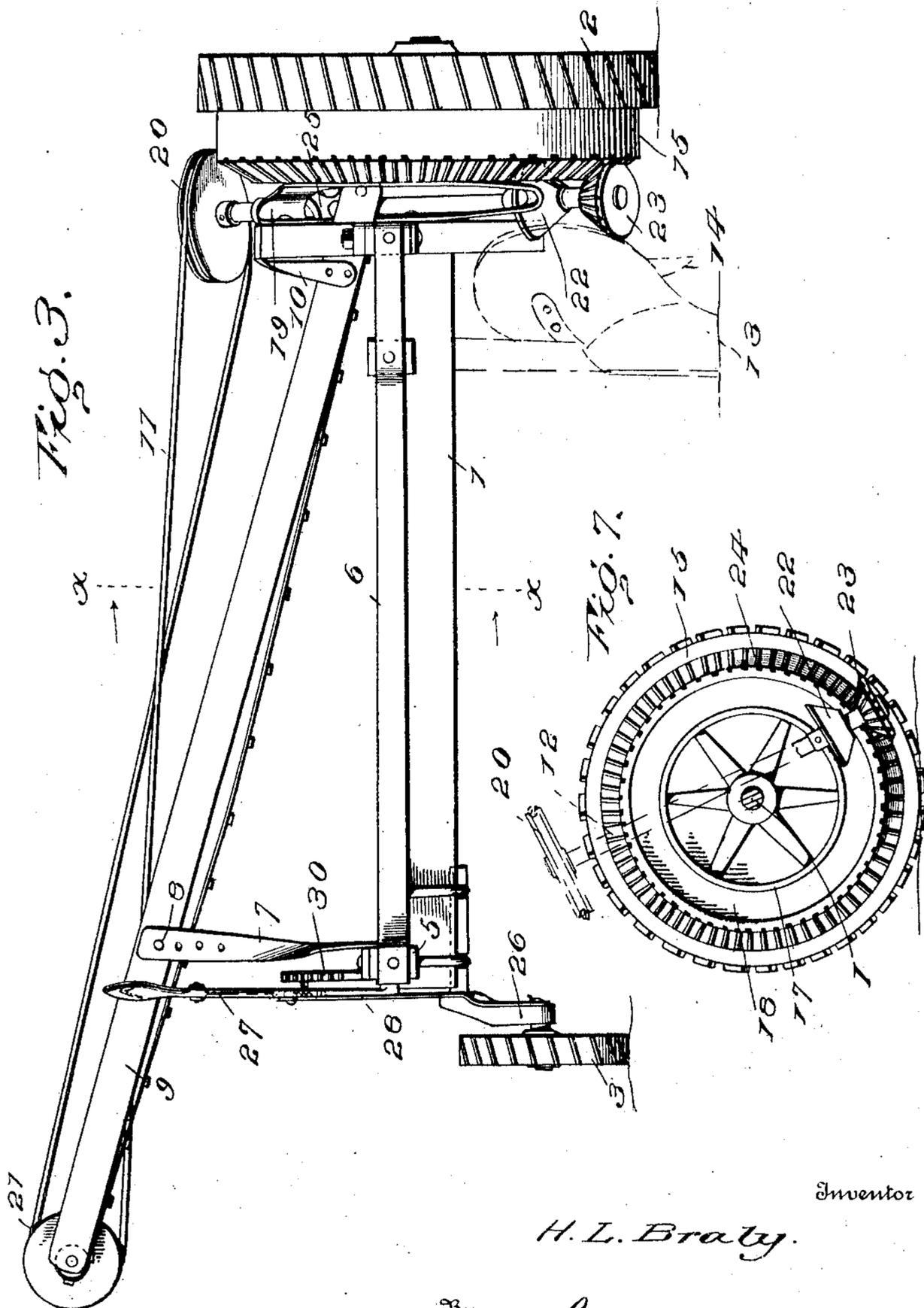
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NO MODEL.

3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

HUGH L. BRALY, OF CLARENDON, TEXAS.

ROAD-GRADER.

SPECIFICATION forming part of Letters Patent No. 756,323, dated April 5, 1904.

Application filed July 6, 1903. Serial No. 164,454. (No model.)

To all whom it may concern:

Be it known that I, HUGH L. BRALY, a citizen of the United States, residing at Clarendon, in the county of Donley and State of Texas, have invented certain new and useful Improvements in Road-Graders, of which the following is a specification.

This invention aims to devise a machine of novel formation for constructing and grading roads, the purpose being to provide a machine capable of operation by light draft and effective for the purpose designed.

The machine comprises a plow and elevator for conveying the earth to one side of the machine and novel means for conveying the earth from the plow to the elevator.

For a full description of the invention and the merits thereof and also to acquire a knowledge of the details of construction of the means for effecting the result reference is to be had to the following description and drawings hereto attached.

While the essential and characteristic features of the invention are susceptible of modification, still the preferred embodiment of the invention is illustrated in the accompanying drawings, in which—

Figure 1 is a central longitudinal section of a road-grading machine embodying the invention, taken on the line X X of Fig. 3 looking in the direction of the arrows. Fig. 2 is a top plan view of the machine. Fig. 3 is a view of the machine as seen from the rear. Fig. 4 is a detail section about on the line Y Y of Fig. 1 looking in the direction of the arrow. Fig. 5 is a detail perspective view of the side portion of the machine opposite to that provided with the plow and earth-lifting mechanism. Fig. 6 is a detail perspective view of the shaft provided with the packer and the loosener, showing the relation of the guard. Fig. 7 is a detail view of the earth-lifting wheel and the shaft provided with the packer and the rake.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The frame supporting the operating parts of the machine may be of any approved construc-

tion and is mounted upon an axle 1, provided at opposite ends with ground-wheels 2 and 3. As shown, the frame comprises longitudinal bars 4 and 5 and front and rear connecting-bars 6. Standards 7 project upward from the longitudinal bar 5 and are provided at their upper ends with a series of openings 8 to admit of vertical adjustment of the outer or delivery end of the elevator 9, which extends transversely of the machine and inclines upwardly toward its delivery end, being pivoted at its receiving end at 10 to brackets applied to the outermost longitudinal bar 4. The elevator 9 may be of any construction and comprises a frame and an endless apron or belt, to which motion is imparted by means of a drive-belt 11 from the shaft 12, arranged at one side of the machine and journaled in bearings secured thereto, said shaft being upwardly inclined, as shown most clearly in Figs. 1 and 7.

The plow 13 for loosening the earth is located near one side of the machine and is of the single moldboard type and is arranged to throw the furrow or earth outward toward the ground-wheel 2. A disk 14 coöperates with the share and moldboard of the plow to cause the earth to ride upward upon the moldboard to a greater height than it would ordinarily do if said disk were not provided. A lifting-wheel 15 is arranged intermediate of the ground-wheel 2 and the plow 13 and may form a part of the latter or be connected thereto in any way. The lifting-wheel 15 comprises annular rims 16 and 17, having a concentric arrangement and spaced apart, as indicated at 18, said annular space 18 receiving the earth from the moldboard of the plow and carrying the same upward to the elevator. The annular space 18 is closed upon three sides and is open upon the side facing inward or toward the plow, so as to receive the earth from the plow and discharge the same laterally into the shoe of the elevator. A guard 19 closes the open side of the annular space 18 for a portion of its circumferential length and serves to prevent lateral discharge of the earth in its upward travel from the plow to the elevator. This guard is connected to the frame in any substantial manner, and, as

shown, its end portions are bent and apertured to receive the bolts or fastenings employed for attaching the guard to the outermost longitudinal bar 4.

5 The shaft 12 is arranged at an upward and forward inclination and is provided at its upper end with a band-pulley 20, which supports one end of the drive-belt 11, by means of which motion is transmitted to the endless
10 apron of the elevator 9 by passing around the band-pulley 21, secured to the projecting end of the shaft supporting the upper outer end of the endless belt or apron of the elevator. A packer-wheel 22 is secured to the lower
15 end portion of the shaft 12 and is arranged to project a short distance into the annular space 18 of the earth-lifting wheel 15. This packer-wheel is designed to compress the earth into the annular space 18, so as to prevent discharge thereof and insure its moving upward with the wheel during the rotation thereof. The shaft 12 receives its motion from the ground-wheel 2, and for this purpose is provided with a pinion 23 in mesh with cog-gear
25 ing 24 of the earth-lifting wheel 15. The earth loosener and rake is indicated at 25 and consists of a pin or spur wheel secured to the upper portion of the shaft 12 and having its arms arranged to enter the space 18 and
30 loosen the earth and rake the same therefrom into the shoe or receiving end of the elevator 9. The arms or spurs of the rake or part 25 have a partial twist imparted thereto or are beveled upon their active sides, so as to readily
35 penetrate the earth and loosen the same and cause discharge thereof from the space 18.

The ground-wheel 3 is mounted upon the spindle of a crank-arm 26, journaled at its upper end to the axle 1, said crank-arm being
40 adjustable to admit of raising and lowering the side portion of the frame remote from the earth loosening and lifting mechanism. The hand-lever 27, fulcrumed at its lower end to the longitudinal bar 5, is connected by pitman
45 28 with the crank-arm 26 and is provided with hand-latch 29 for cooperation with toothed segment 30 to hold the ground-wheel 3 in the required adjusted position.

As the machine is propelled over the road
50 or surface to be graded or opened the plow 13 loosens the earth and elevates and throws the same laterally into the annular space 18 of the earth-lifting wheel. The loose earth is sufficiently compressed in the space 18 by
55 the packer 22 to cause it to move upward with the wheel in its rotation and is held from material displacement by the guard 19 until it reaches the shoe or receiving end of the elevator 9, when the part 25 comes into play for
60 again loosening the earth and raking it from the space 18 into the shoe or upon the receiving end of the elevator 9, which takes up the earth and carries the same across the machine and discharges it at the opposite side. The
65 disk 14, cooperating with the moldboard of

the plow, is adapted to have a vibratory movement to prevent choking of the plow, and for this purpose its standard 31 is pivoted to the frame and a spring 32 is arranged to cooperate therewith. An arm 33 is attached at one
70 end to a longitudinal bar 4 of the frame and is provided at its opposite end with a scraper-blade to remove any dirt that may tend to adhere to the rim 16. The arms of the rake 25
75 are constructed to remove all dirt from the rim 17. It is to be understood that the elevator and other parts will be suitably braced to afford the requisite strength and stability necessary in a machine of this class.

Having thus described the invention, what
80 is claimed as new is—

1. In a road-grading machine, the combination of means for loosening the earth and effecting a lateral discharge thereof, an earth-lifting wheel arranged to receive the earth
85 from the said earth-loosener, a packer for compressing the earth into the receiving-space of the earth-lifting wheel, and means for loosening and effecting a discharge of the earth from the earth-lifting wheel at a predetermined
90 point in its rotation, substantially as described.

2. In a road-grading machine, the combination of means for loosening the earth and effecting a lateral discharge thereof, an earth-lifting wheel arranged to receive the earth
95 from the said earth-loosener, a packer for compressing the earth into the receiving-space of the earth-lifting wheel, an elevator, and means for effecting a discharge of the earth from the earth-lifting wheel so as to be taken up by
100 the elevator for conveyance to the required point of discharge, substantially as set forth.

3. In a road-grading machine, the combination of means for loosening the earth and effecting a lateral discharge thereof, an earth-lifting wheel arranged to receive the earth
105 from the said earth-loosener, a packer for compressing the earth into the receiving-space of the earth-lifting wheel, means for effecting a discharge of the earth from the earth-lifting
110 wheel at the required point in its rotation, and a guard for closing the open side of the earth-receiving space of said wheel between the packer and earth-discharging device, substantially as set forth.
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4. In combination, means for loosening and effecting a lateral discharge of earth, an earth-lifting wheel having an annular space open on the side facing the earth-loosener so as to receive the earth, and a packer of tapering form
120 arranged to compress the earth within the receiving-space of the wheel, substantially as set forth.

5. In combination, means for loosening and effecting lateral discharge of earth, an earth-lifting wheel having an annular space open on the side facing the earth-loosener so as to receive the earth, a packer arranged to compress the earth within the receiving-space, and means for loosening and raking the earth from
130

the space at the required point of discharge, the same consisting of a wheel having arms or spurs to enter the earth-receiving space of the wheel, substantially as described.

5 6. In combination, means for loosening and effecting lateral discharge of earth, an earth-lifting wheel having an annular space open on the side facing the earth-loosener so as to receive the earth, a shaft connected with the
 10 earth-lifting wheel so as to receive motion therefrom, and a packer and a rake secured to opposite end portions of the shaft and arranged to operate upon the earth in the receiving-space of said wheel, substantially as
 15 and for the purpose specified.

7. In combination, means for loosening and effecting lateral discharge of earth, an earth-lifting wheel having an annular space open on the side facing the earth-loosener so as to receive the earth, a shaft connected with the
 20 earth-lifting wheel so as to receive motion therefrom, a packer and a rake secured to opposite end portions of the shaft and arranged to operate upon the earth in the receiving-
 25 space of said wheel, and an elevator arranged to receive the earth as discharged from the lifting-wheel by means of the rake, substantially as described.

8. In combination, means for loosening and
 30 effecting lateral discharge of earth, an earth-lifting wheel having an annular space open on the side facing the earth-loosener so as to re-

ceive the earth, a shaft connected with the earth-lifting wheel so as to receive motion therefrom, a packer and a rake secured to op- 35
 40 posite end portions of the shaft and arranged to operate upon the earth in the receiving-space of said wheel, and a guard for closing the open side of the earth-receiving space between the packer and rake, substantially as described.

9. In a machine of the character described, the combination of a plow, a disk arranged to cooperate with the moldboard of the plow, an earth-lifting wheel having an annular space 45
 50 open on the side facing the plow so as to receive the earth therefrom, a packer for compressing the earth in the receiving-space of the earth-lifting wheel, an elevator arranged to receive the earth at a predetermined point in the rotation of the lifting-wheel, a wheel hav-
 55 ing arms to enter the receiving-space of the lifting-wheel to effect a discharge of the earth therefrom, and a guard for closing the open side of the earth-receiving-space at a point between the packer and earth-discharging wheel, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

HUGH L. BRALY. [L. s.]

Witnesses:

SAM CHADWICK,
 JAMES BROYLES.