

No. 832,474.

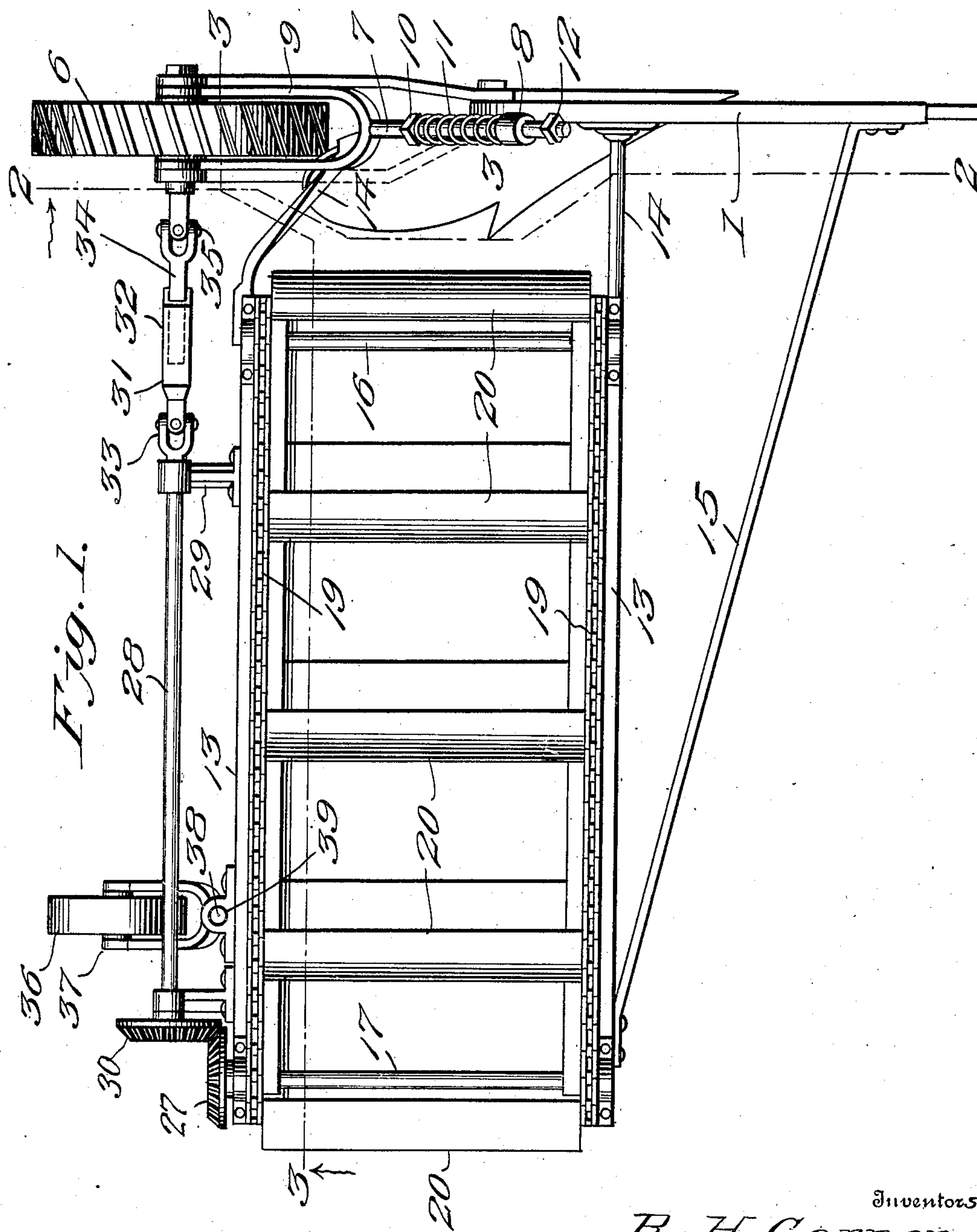
PATENTED OCT. 2, 1906.

R. H. GARNER & K. T. HENLEY.

GRADING MACHINE.

APPLICATION FILED DEC. 30, 1905.

2 SHEETS—SHEET 1.



Witnesses

Edwin G. McKee,
R. M. Smith.

By

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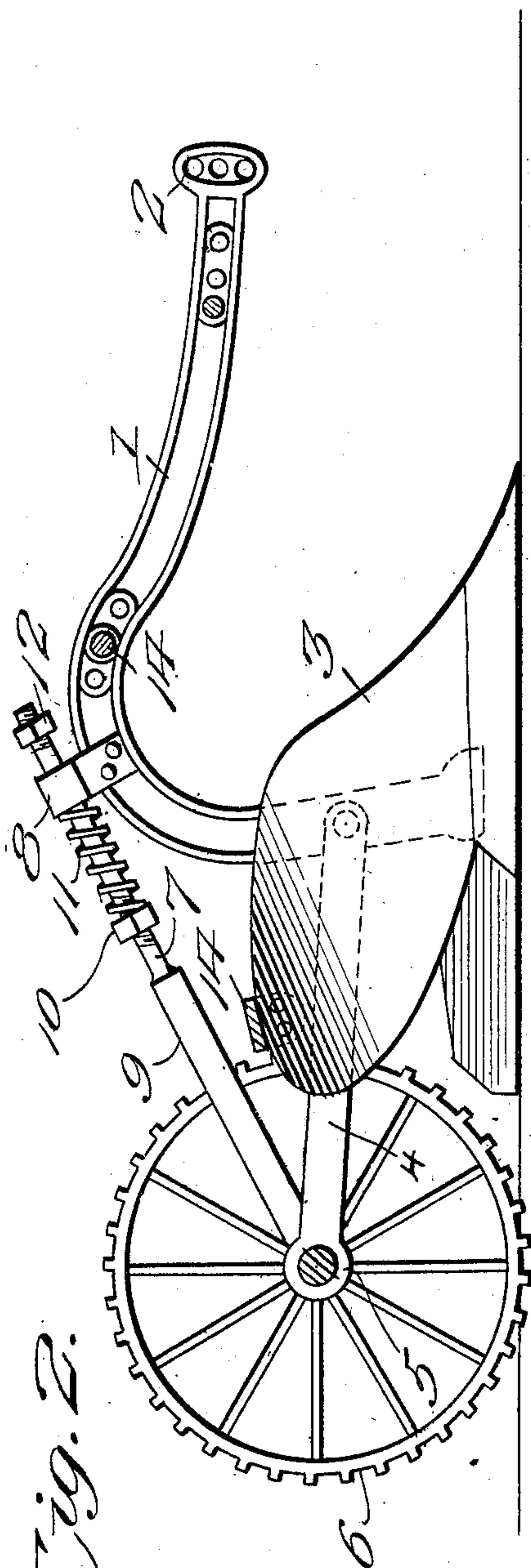


Fig. 2.

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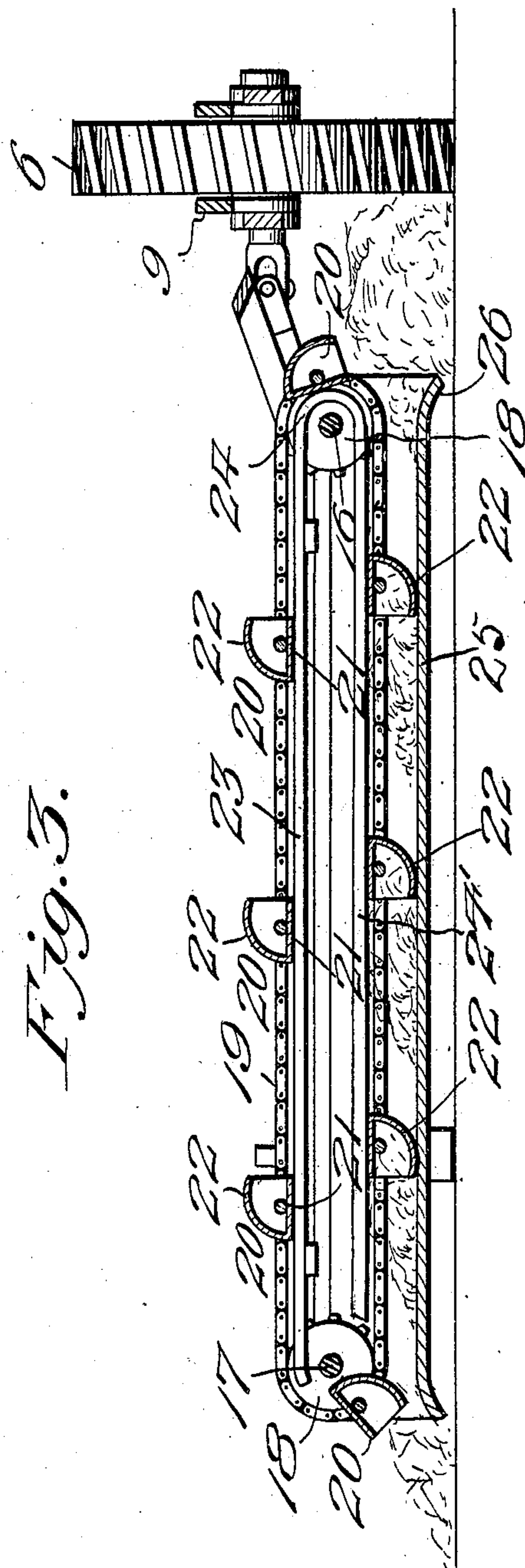


Fig. 3.

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UNITED STATES PATENT OFFICE.

RAY H. GARNER AND KINTCHEN T. HENLEY, OF BAY CITY, ILLINOIS.

GRADING-MACHINE.

No. 832,474.

Specification of Letters Patent.

Patented Oct. 2, 1906.

Application filed December 30, 1905. Serial No. 294,002.

To all whom it may concern:

Be it known that we, RAY H. GARNER and KINTCHEN T. HENLEY, citizens of the United States, residing at Bay City, in the county of Pope and State of Illinois, have invented new and useful Improvements in Grading-Machines, of which the following is a specification.

The invention relates generally to an improvement in grading-machines, and primarily to a machine adapted for road-grading, by the use of which material taken from the side of the road is deposited on the road-bed proper.

It is well known that in the continued use of a road for vehicles the central portion thereof will become packed and depressed, leaving a ridge at each side of the road.

It is the object of the present invention to produce a grader adapted for evenly distributing the earth composing the ridge over the road-bed, so as to elevate said bed and remove the ridge.

The invention will be described in the following specification, reference being had particularly to the accompanying drawings, in which—

Figure 1 is a plan of a grader constructed in accordance with our invention; Fig. 2, a section on line 2 2 of Fig. 1; Fig. 3, a section on line 3 3 of Fig. 1.

Referring to the drawings, the invention comprises in its essential details a beam 1, provided at its forward end with the usual clevis-receiving member 2 and at the opposite end with a moldboard 3 of the usual plow construction. Arms 4 are pivotally connected at their forward ends to the beam 1 and provided at their rear ends with bearings 5, in which is revolubly supported a ground wheel 6, peripherally roughened or ridged to afford a grip in use. A pressure-rod 7 is slidably supported at its forward end in a cored lug 8, projecting from the beam 1, said rod being branched at its rear end to provide parallel spaced arms 9, the rear terminals of which embrace the axle of the wheel 6. A collar 10 is arranged for threaded engagement with the rod 8 and serves as an adjustable abutment for the rear end of the coil-spring 11, which encircles the rod and bears at its forward end against the lug 8. The terminal of the rod 7 forward of the lug is provided with a nut 12 to prevent disengagement from the lug.

A carrier is mounted for operation laterally

of the plow 3, comprising side frames 13, secured by brace-bars 14 to the plow 3 and beam 1, a second brace-bar 14 projecting from the forward end of the beam and secured to the outer or free end of the forward side frame 13, as clearly shown in Fig. 1. Shafts 16 and 17 are secured transversely of the carrier-frame at the inner and outer ends, respectively, each of said shafts being provided at opposite ends with sprocket-wheels 18. Carrier-chains 19 operatively engage the sprocket-wheels of each shaft, arranged in alinement longitudinally of the frame, so as to provide an endless sprocket-chain traveling longitudinally of the frame adjacent each side 13 thereof. Angle-buckets 20 are secured transverse the carrier-frame, being revolubly supported at their respective ends to the opposite sprocket-chain 19. By preference these buckets are of the well-known angle type, having a flat side 21 and a curved side 22, as clearly shown in Fig. 3. A guide-plate 23 is secured longitudinally of the carrier and between the side frames thereof, being arranged immediately below and adjacent the chains 19. At the inner end—that is, the end next the plow—the guide-plate is extended about the shaft 16 concentric to the path of travel of the sprocket-chain at this point and continued to provide a bottom guide-plate 24', as shown. A bottom plate 25 is secured between the side frames 13 and extends longitudinally throughout the length of the carrier, the free ends of the plate being downwardly bent at 26 to provide a flaring entrance and exit to the carrier. The plate 25 is disposed sufficiently below the lower path of travel of the chains 19 to permit the curved side 22 to rest in contact with said plate, while the plane sides 21 are approximately horizontal, thus arranging the mouths of the buckets at direct right angles to the plane of said plate.

The shaft 17 is extended beyond the rear side frame 13 and provided with a bevel-gear 30. A drive-shaft 28, supported in bearings 29, projecting from the rear side frame 13, is provided at its outer end with a bevel-gear 27 to intermesh with bevel-gear 30 and connected at its inner end to the axle of the ground-wheel 6 through the medium of a universal connection, as 31, so constructed as to permit independent movement of the carrier relative to said wheel. By preference the connection 31 comprises a sleeve-bar 32, having a pivotal connection at 33

with the rod 28, the bore of said sleeve being square in section. The other member of the connection comprises a squared rod 34, adapted to fit within the sleeve 32 and having a pivotal connection at 35 with an extension from the axle-wheel 6. The outer end of the carrier is supported by a caster-wheel 36, mounted in arms 37, projecting from a pivot-bolt 38, arranged for free casting in a bearing 39, squared to the rear side frame 13 of the carrier.

In use the device is operated to cause the plow to break up the ground in the ridge formed alongside the road, as hereinabove described, the carrier extending at right angles to the path of operation of the plow and overlying the road-bed. The earth raised by the action of the plow will accumulate or heap alongside the flaring mouth of the carrier, and the buckets 22, which move longitudinally of the carrier, will force said earth lengthwise the bottom plate 25 and deliver the same onto the road-bed at the exit end of the carrier, thus distributing the earth from the ridge onto the road-bed at a point approximately adjacent the opposite ridge of the road. The guide-plate 23 is so arranged as to engage the plane side 21 of the buckets and maintain the curved side thereof uppermost during the travel of the buckets in their operation, so that in rounding the projecting extension 24 at the operative end of the carrier the mouths of the buckets will be forced into the earth heaped up by the action of the plow and force the same into the carrier and longitudinally thereof. As the buckets leave the bottom plate 25 at the discharge end of the carrier they are without control as to position, so that the weight of the earth therein tends to hold the mouth of the rising bucket in the lowermost position to discharge the earth therefrom. The end of the guide-plate 23 at the discharge end of the carrier is so arranged as to contact with the juncture of the plane and curved sides of the bucket as said buckets rise after the dumping operation. This contact causes the buckets to turn upon their axis, so as to bring the plane or flat side thereof into contact with the guide 23 and to maintain said position during the travel of the buckets toward the plow.

The grader will readily remove the ridges alongside the road-bed and evenly distribute

the same over the road, it being understood that the operative plane of the plow may be so controlled relative to the road-bed as to cause the earth to be distributed at the point desired.

The ground-wheel 6 is effective for suitably operating the carrier and may be adjusted to maintain the desired gripping action upon the earth whereby to insure positive operation of the parts.

It will be noted that the ground-wheel is in direct alinement in rear of the plow, whereby a more uniform support and guiding action is given the plow than would otherwise result.

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

1. A grader comprising a plow, a ground-wheel mounted in rear thereof, a carrier-frame extending laterally of and supported by the plow-frame, sprocket-chains mounted for movement longitudinally of the carrier-frame, buckets pivotally supported by said chains and arranged transverse the frame, means operated by the ground-wheel for driving the chains, a guide-plate for maintaining said buckets in inoperative position during their travel toward the plow, and a bottom plate secured to the carrier-frame to maintain said buckets in operative position during their travel from the plow.

2. A grader comprising a plow, a ground-wheel mounted in rear thereof, a carrier-frame extending laterally of and supported by the plow-frame, sprocket-chains mounted for movement longitudinally of the carrier-frame, buckets pivotally supported by said chains and arranged transverse the frame, means operated by the ground-wheel for driving the chains, a guide-plate for maintaining said buckets in inoperative position during their travel toward the plow, a bottom plate secured to the carrier-frame to maintain said buckets in operative position during their travel from the plow, and a caster-wheel supporting the outer end of the carrier-frame.

In testimony whereof we affix our signatures in presence of two witnesses.

RAY H. GARNER.

KINTCHEN T. HENLEY.

Witnesses:

W. H. DENSON,

G. B. WATERS.