

(No Model.)

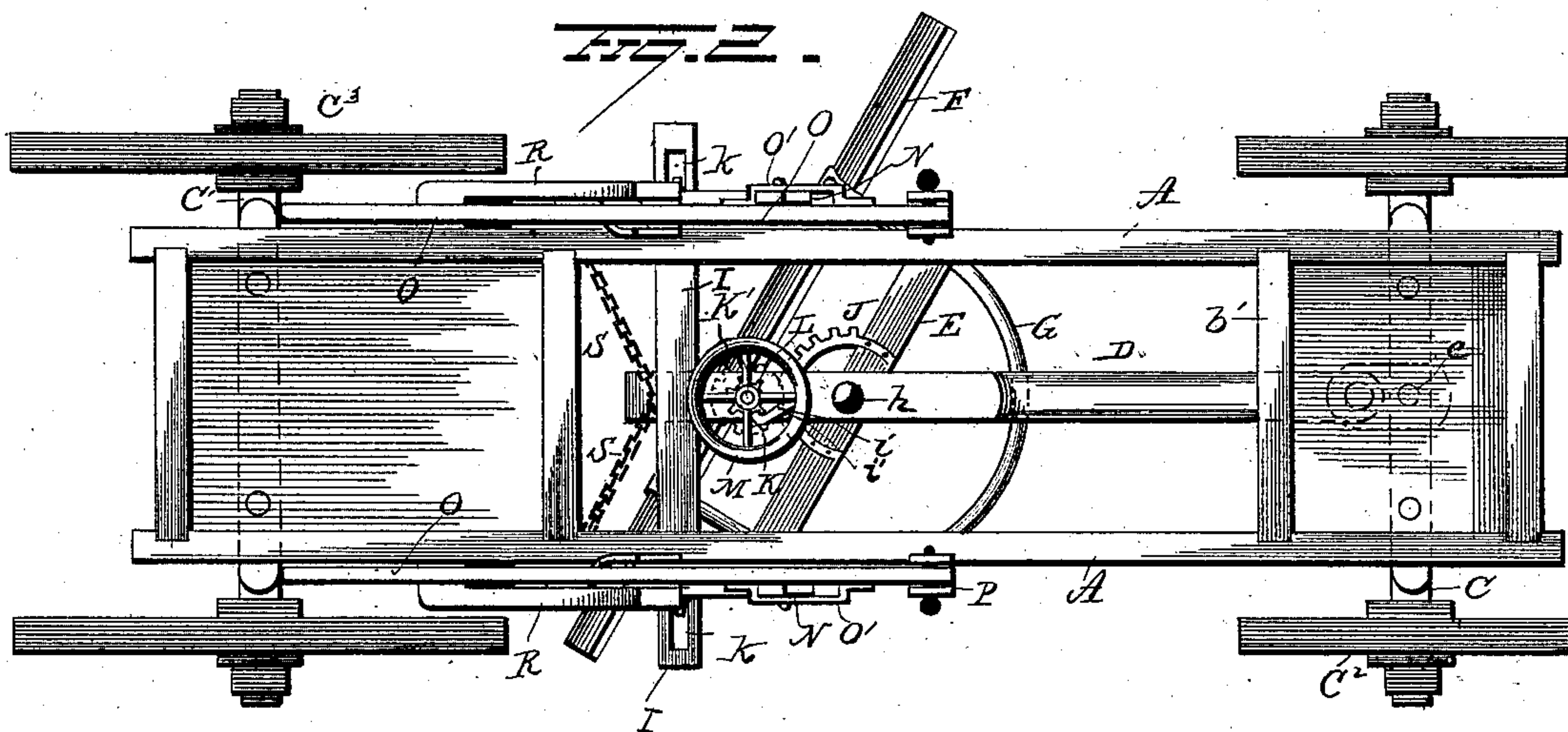
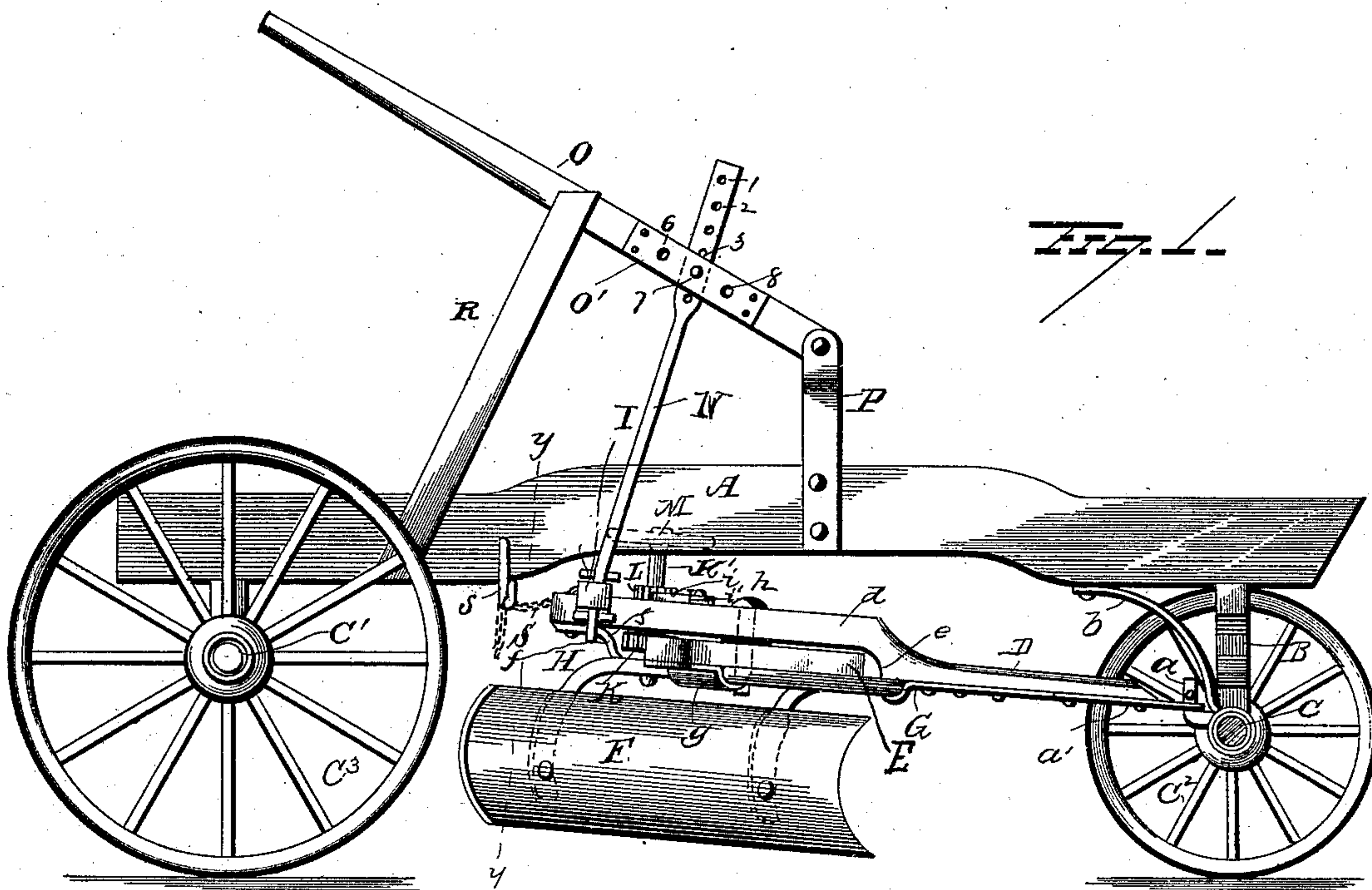
2 Sheets—Sheet 1.

G. & O. E. MOATS.

ROAD GRADER.

No. 370,806.

Patented Oct. 4, 1887.



Witnesses
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UNITED STATES PATENT OFFICE.

GEORGE MOATS AND ORTUS E. MOATS, OF GUSS, IOWA.

ROAD-GRADER.

SPECIFICATION forming part of Letters Patent No. 370,806, dated October 4, 1887.

Application filed February 25, 1887. Serial No. 228,841. (No model.)

To all whom it may concern:

Be it known that we, GEORGE MOATS and ORTUS E. MOATS, of Guss, in the county of Taylor and State of Iowa, have invented certain new and useful Improvements in Road-Graders; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates to an improvement in road-graders, the object of our invention being to provide a device which affords a means of adjustment of working parts by simple mechanism, that is efficient in action, easy to regulate, not liable to derangement or breakage, and comparatively low in cost of production.

With these objects in view our invention consists in certain features of construction and combinations of working parts, that will be hereinafter described, and pointed out in the claims.

Referring to the drawing, making a part of this specification, Figure 1 is a view in side elevation of the road-grader, the forward right-hand wheel being removed. Fig. 2 is a plan view. Fig. 3 is a cross-section of the device, taken on the line *y y*, Fig. 1, or immediately in advance of the rear wheels of the apparatus.

A represents the frame of the device. It consists of two arched side pieces that are held parallel to each other by cross-pieces firmly secured at the ends, two of these transverse timbers being framed to the longitudinal pieces at the front and two at the rear to form rectangular tool-boxes, upon the bottoms of which front and rear bolsters are rigidly bolted.

The frame A, with attached bolsters B, is mounted upon a front and rear axle, C C', and their loosely-attached wheels C² C³, the rear axle, C', being made immovable and the front axle, C, being permitted to swing in a horizontal plane.

To the axle C a half reach-pole, D, is pivotally connected by a bent link-pin, *a*, which engages a perforated strap-plate, *a'*, fastened to the reach-pole to project from its front end. A curved brace, *b*, extends from the cross-piece *b'* of the frame A to engage the king-bolt *c*, which is inserted through the front axle, C, to-

gether with the flat horizontal extension of the bent pin *a* and end of the brace *b*, as stated above.

The half-reach D is provided with an offset, *d*, the rear end of same being connected to the transverse equalizing-bar E, which is made to extend across and below the side frame-pieces, A, this bar affording a means to support the scraper-blade F and its operative mechanism that is adjusted in place upon the offset portion of the reach-pole D.

Near the shoulder *e* of the offset *d* on the half-reach D a carrier-plate, G, is bolted by its front end, and is extended rearward, with a return-bend made in its body at the point *f*, elevating the rear end of this plate G, to have a contact of its top surface with the under side of the reach D. This method of construction produces an elongated opening between the plate and the half-reach D, as shown in Fig. 1.

The scraper-blade F is of curved cross-section. This curvature is extended throughout its length, the concave surface being placed toward the front of the machine.

A horizontal brace, H, is bent at ends to conform to the rear surface of the scraper-blade F, and is riveted thereon. The body of the brace H is bent in semicircular form, which is of such dimension as to permit the curved brace to lie in a box or loop formed integrally in the body of the carrier-plate G near its front end. The horizontal brace H is stiffened by the equalizing-bar E, which is affixed upon its top surface by loop-plates *g*, that clasp the body of the brace H and hold it and the equalizing-bar in rigid connection, bolts or screws being inserted to connect these parts.

Midway between the ends of the cross-bar E the semicircular toothed rack J is bolted to this bar. A bolt, *h*, is inserted through the reach D, bar E, and carrier-plate G. This bolt, passing through the center of the semicircular rack J, affords a pivotal point upon which the bar E and its attached gear-wheel can be made to swing horizontally.

A pinion, K, is mounted between the half-reach D and carrier-plate G to engage with its teeth the semicircular rack J, the vertical shaft K', upon which the pinion K is located, being secured in upright position by boxes formed in the carrier-plate, as shown in Fig. 3.

A ratchet-wheel, L, fixed upon the vertical shaft K', is engaged by a pawl, i, which may be secured by the pin i', that is inserted in a hole made in the reach D, and thus prevent
 5 by its locking action a disengagement accidentally of the pawl i when it is dropped into contact with the teeth of the ratchet-wheel L. A hand-wheel, M, is fixed upon the upper end of shaft K' to afford a means of operating the
 10 mechanism, and thus cause a rotative movement of the scraper-blade F upon the center bolt, h, as a pivot-point.

Elongated slots k are made through the body of the cross-bar I near its ends to receive the
 15 lower ends of the hanger-rods N, that have their upper ends flattened to slide in slots made in the outer surface of the handle-bars O, these channels being produced by a shouldered reduction of the body of the bars O at
 20 this point, the cap-plates O' being fixed upon the outer faces of the bars immediately over the recessed parts to retain the flattened rods N in place. The plates O', as well as the upper ends of the bars N, are provided with
 25 spaced perforations 1 2 3 and 6 7 8 to allow the bars to be changed in their position. The rear ends of the handle-bars O are pivoted to the upright standards P, that are forked to receive their perforated ends. The standards
 30 P are fixed upright upon the side pieces, A, of the frame of the machine by bolts or screws.

Near the rear ends of the side pieces, A, the crotched diagonal braces R are secured to receive the handle-bars O and support them.
 35 The provision of the rigging just described is made to afford a means for the vertical adjustment of the scraper-blade, and also giving any desired degree of inclination of this blade from a horizontal plane, it being essential that the
 40 cutting-edge of the scraper-blade be inclined to form a proper crown or elevation at the center of the road-bed.

It is evident from the foregoing description that the rotation of the hand-wheel M will
 45 swing the blade of the grader to afford an inclination of its cutting-edge to the ground-surface, the oblique or diagonal position thus conferred producing a shearing action of the blade upon the earth to be removed, facili-

tating the removal of masses of material, which
 50 can thus be removed with comparative ease.

The position of the blade F is secured by the stay-chains S S, that are attached at one end to the center of the cross-bar I, their free ends
 55 being extended to engage the body or links of the chains with the hooks that are rigidly attached to the sides of the frame A at s s. (See Fig. 1.)

When one side of the road-bed is properly leveled to a center line, the direction of the
 60 machine may be reversed to level the other half, and thus avoid the necessity of a change of the angular position of the scraper-blade. If this change is desired, however, it can be quickly effected in the manner already indi-
 65 cated.

Minor changes might be made in the constructive details herein shown without exceeding the scope of our invention. We do not, therefore, desire to limit ourselves to exact
 70 forms exhibited; but,

Having fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a road-grader, the combination, with
 75 a half reach-pole and its attached cross-bar, of a curved scraper-blade pivotally secured to the half reach-pole, a semicircular rack, a pinion to engage the rack, a vertical shaft, ratchet and pawl, hand-wheel, and means for sup-
 80 porting adjustably the half-reach and its cross-bar in connection with the side frame of the machine, substantially as set forth.

2. In a road-grader, the combination, with
 85 a frame and axles, of a half-reach pivoted to the front axle, a rigidly-attached cross-bar, and scraper-blade pivotally secured to the half-reach, the scraper being adapted to receive vertical and rotative adjustment with regard
 90 to a road-bed, substantially as set forth.

In testimony whereof we have signed this specification in the presence of two subscribing witnesses.

GEORGE MOATS.
 ORTUS E. MOATS.

Witnesses:

GEO. CHRISTOPHER,
 H. D. CHATTERTON.