(No Model.) 2 Sheets—Sheet 1.

LE GRAND KNIFFEN.

ROAD GRADER.

No. 458,234. Patented Aug. 25, 1891.

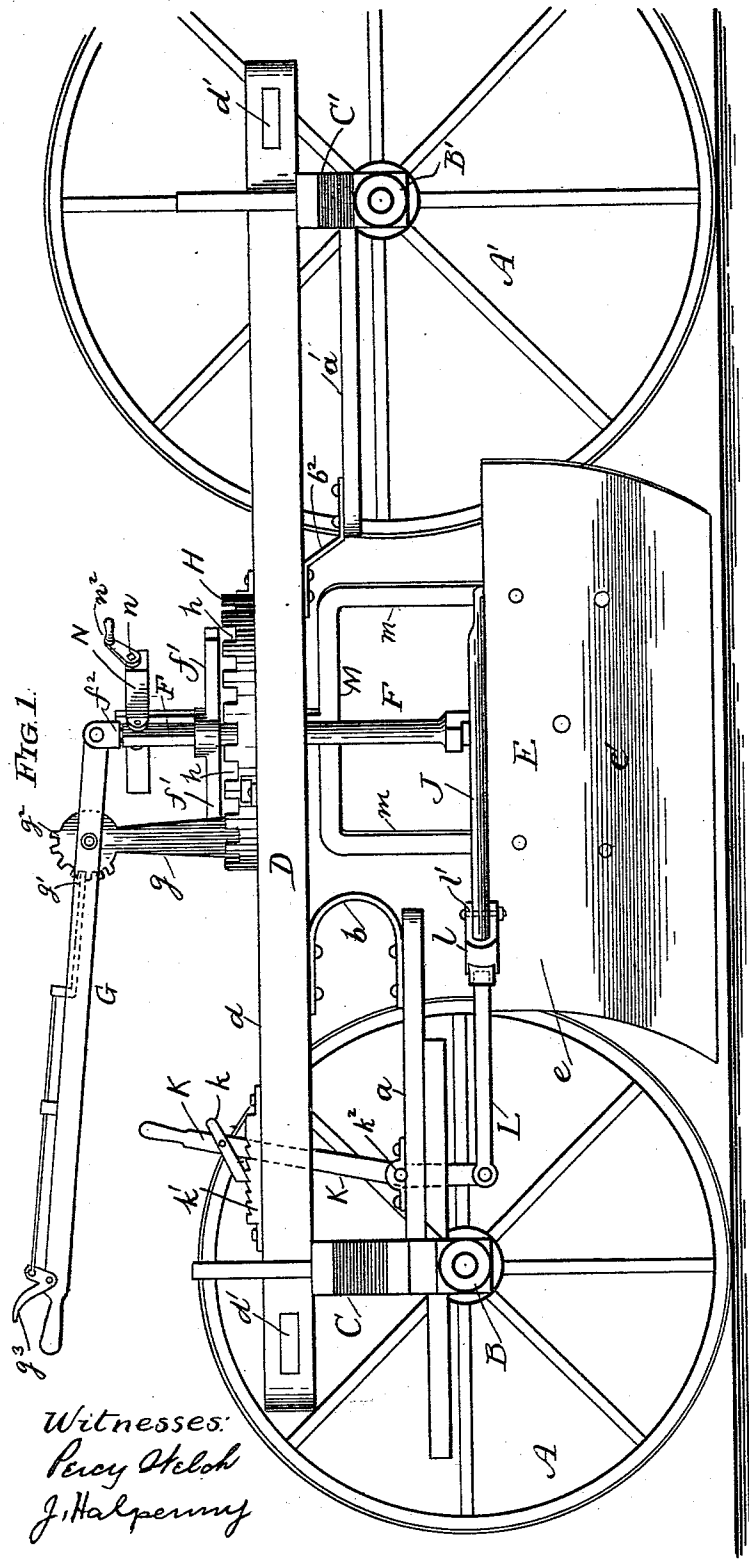


FIG. 1.

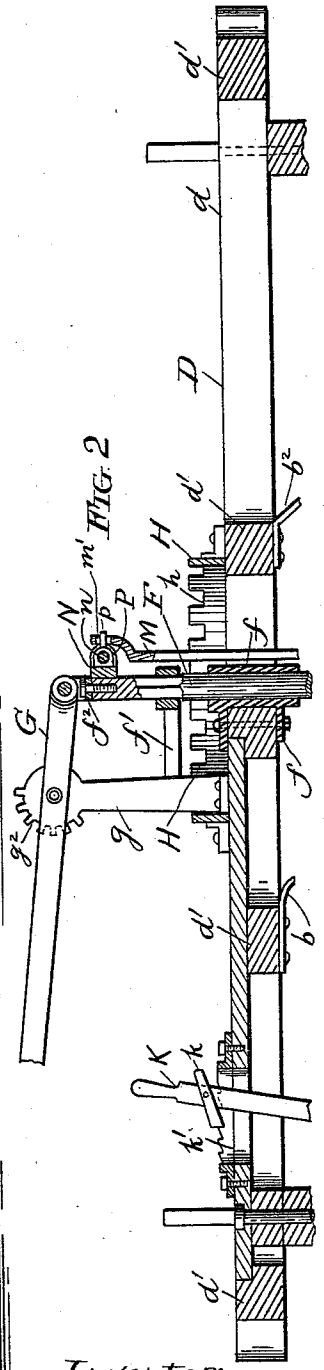


FIG. 2.

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Le Grand Kniffen

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

LE GRAND KNIFFEN.

ROAD GRADER.

No. 458,234. Patented Aug. 25, 1891.

FIG. 3.

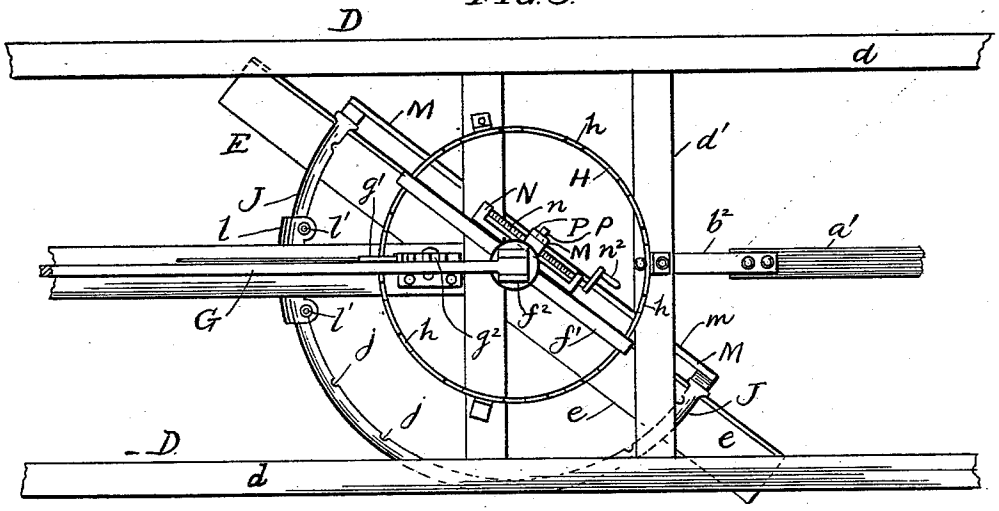


FIG. 4.

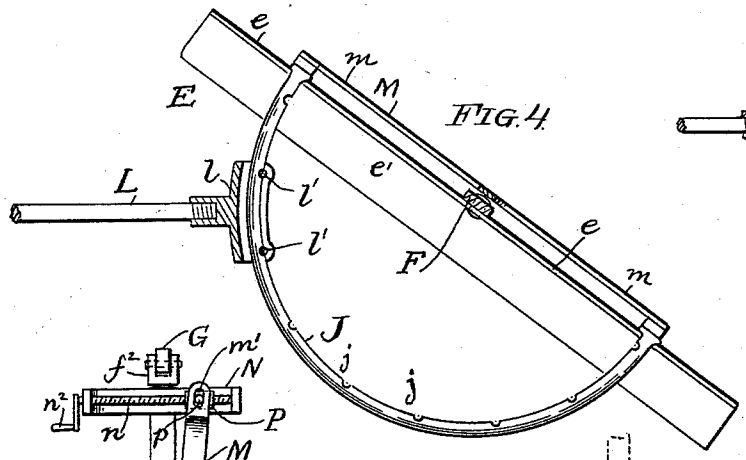


FIG. 5.

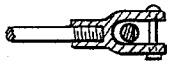


FIG. 6.

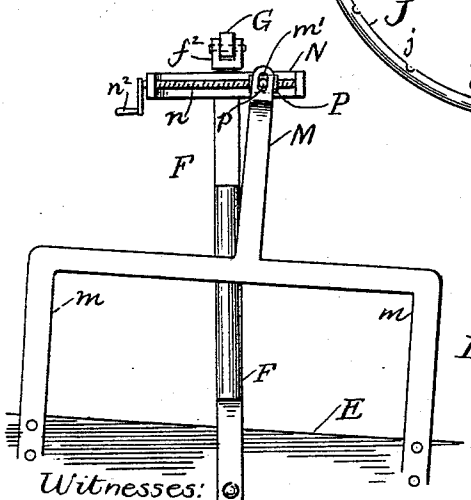
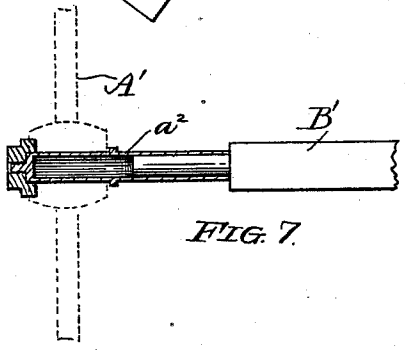


FIG. 7.



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UNITED STATES PATENT OFFICE.

LE GRAND KNIFFEN, OF CHICAGO, ILLINOIS.

ROAD-GRADER.

SPECIFICATION forming part of Letters Patent No. 458,234, dated August 25, 1891.

Application filed April 18, 1891. Serial No. 389,515. (No model.)

To all whom it may concern:

Be it known that I, LE GRAND KNIFFEN, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Road-Graders, of which the following, in connection with the accompanying drawings, is a specification.

The object of my invention is to provide a simple and adjustable scraper for road making, grading, &c., the construction and operation of which will be found fully described herein.

In the drawings, Figure 1 is a side view of the scraper, two of the wheels being removed to more clearly show the working parts; Fig. 2, a vertical longitudinal section of the carrying-frame. Fig. 3 is a top view of portion of frame and scraper. Fig. 4 is a top view of scraper-blade and its adjusting-bail. Figs. 5, 6, and 7 are details of various parts of improvements.

Like letters of reference refer to like parts.

A A′ are the wheels, B B′ axles, and C C′ the cross-supports for box of a wagon, my purpose being to use the trucks of an ordinary wagon for carrying the scraper.

On the cross-supports C C′ is placed the carrying-frame D of scraper. This frame consists, mainly, of two longitudinal pieces of timber d d and cross-pieces d' d', all fastened rigidly together. The reach a, attached to front axle, has a brace b connected to the frame D, and the reach a' on rear axle has a similar brace b^2.

E is the scraper, which consists of a straight horizontal blade e of steel or wrought-iron. The blade is slightly curved, as shown at e', and sharpened on lower edge. The scraper E is attached and pivoted to the vertical shaft F. This shaft is mounted in the journal-bearing f on frame D.

Attached rigidly to the shaft F is a cross-bar f', which is parallel with the scraper-blade. On the upper end of shaft is a jointed bearing f^2, connected with the lever G, having a fulcrum on the standard g. The lever G is provided with an adjusting-pawl g', engaging in the toothed segment g^2 and operated by small lever g^3 on handle of the lever G. By operating the lever G the blade of the scraper is adjusted vertically to any depth desired in the ground, or it may be raised completely from the earth, as shown in Fig. 1.

H is a circular piece of metal having notches h h and is bolted to the frame D. When the blade e is lowered for scraping purposes, the cross-bar f' engages in the notches h h and prevents the blade from being twisted around. While the cross-bar f' is raised out of the notches the blade is capable of horizontal adjustment and may be placed transversely oblique or otherwise with the surface to be scraped. The parts H and f' are not absolutely essential.

To retain the blade e in any of positions named, whether cross-bar f' is in the notches h or not, I employ the following means, which also increase the stability of the machine. I rivet on upper part of blade e the semicircular bail J, as shown in Figs. 1 and 4.

K is a lever having a pawl k engaging a notched plate k'. The lever K is pivoted at k^2, and on its lower end has an arm L, carrying a loop l, which passes around the bail J. This loop has two pins l' l', which engage in notches j j on the bail J. By shoving the lever K forward the arm L moves backward and disengages the pins l' l' and allows the scraper-blade to be swung round, and by reversing movement of lever K the bail will be securely held at place desired.

M is an arm or sway-bar having bifurcated parts m m riveted to back of scraper-blade, as shown.

N is a small bracket or frame attached to upper end of shaft F. The bracket N carries a screw-threaded rod n and has a crank n^2 for rotating rod. On the rod n is a nut P, having a stud or pin p entering a slot m' in the arm M. By operating crank n^2 the nut P moves horizontally and moves the arm M, which tilts the scraper-blade laterally in relation to frame D, so that, if desired, one end of blade may cut deeper than the other. While the screw-adjustment of sway-bar M is preferable, it may simply be operated by lever movement.

To prevent either of the rear wheels from following in furrow, I attach a small auxiliary axle a^2 to axle. The auxiliary axle a^2 is hollow, and it is slipped over spindle of axle, as shown in Fig. 7. The auxiliary axle a^2 being

interiorly of same shape as exterior of skein of axle B, it is slipped over the skein until it tightly fits on same, and to retain it securely in place it may be held by a pin or nut on said axle-skein. It will thus be seen that my improvements in road-graders provide a very compact and strong machine, adapting the wheeled portions of an ordinary wagon for carrying same and having a scraper capable of horizontal, vertical, and lateral adjustment.

What I claim as new is—

1. A road-grader having the carrying-frame D, with a vertical shaft F supporting the scraper-blade, and means for adjusting the shaft and the scraper by said shaft, as described, and for the purposes set forth.

2. A road-grader having the carrying-frame D, the shaft F, supporting the scraper E, and the lever G for adjusting the shaft F vertically and the scraper by said shaft, as described and shown.

3. A road-grader having the carrying-frame D, and the shaft F, having the journal-bearing *f* on said frame and supporting the scraper E, in combination with the lever G, the cross-bar *f'*, and the notched ring H, as described and shown.

4. In a road-grader, a horizontal blade *e*, having a bail J, and the adjusting catch or loop *l*, in combination with the arm L and means for operating the same.

5. In a road-grader, the scraper E, having a bail J, the adjusting catch or loop *l*, engaging in notches on said bail, and the arm L and lever K for operating the same, as described and set forth.

6. In a road-grader, the scraper-blade *e*, having an upwardly-extending arm M, in combination with the screw-threaded shaft or rod *n*, having a nut or stud engaging with the end of arm, as shown and described.

7. In a road-grader, the auxiliary hollow axle a^2 for extending the length of axle A, as described and shown.

8. A road-grader having trucks A B A' B', and a divided reach consisting of parts *a a'*, connected to the carrying-frame D by braces *b* b^2, as shown and described.

9. In a road-grader having a carrying-frame supporting the scraper E, a sway-bar M for laterally tilting the scraper, and means for operating said sway-bar, as described, and for the purpose set forth.

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