3 Sheets—Sheet 1.

# G. W. TAFT.

## Road-Scraper.

No. 220,042. Patented Sept. 30, 1879.

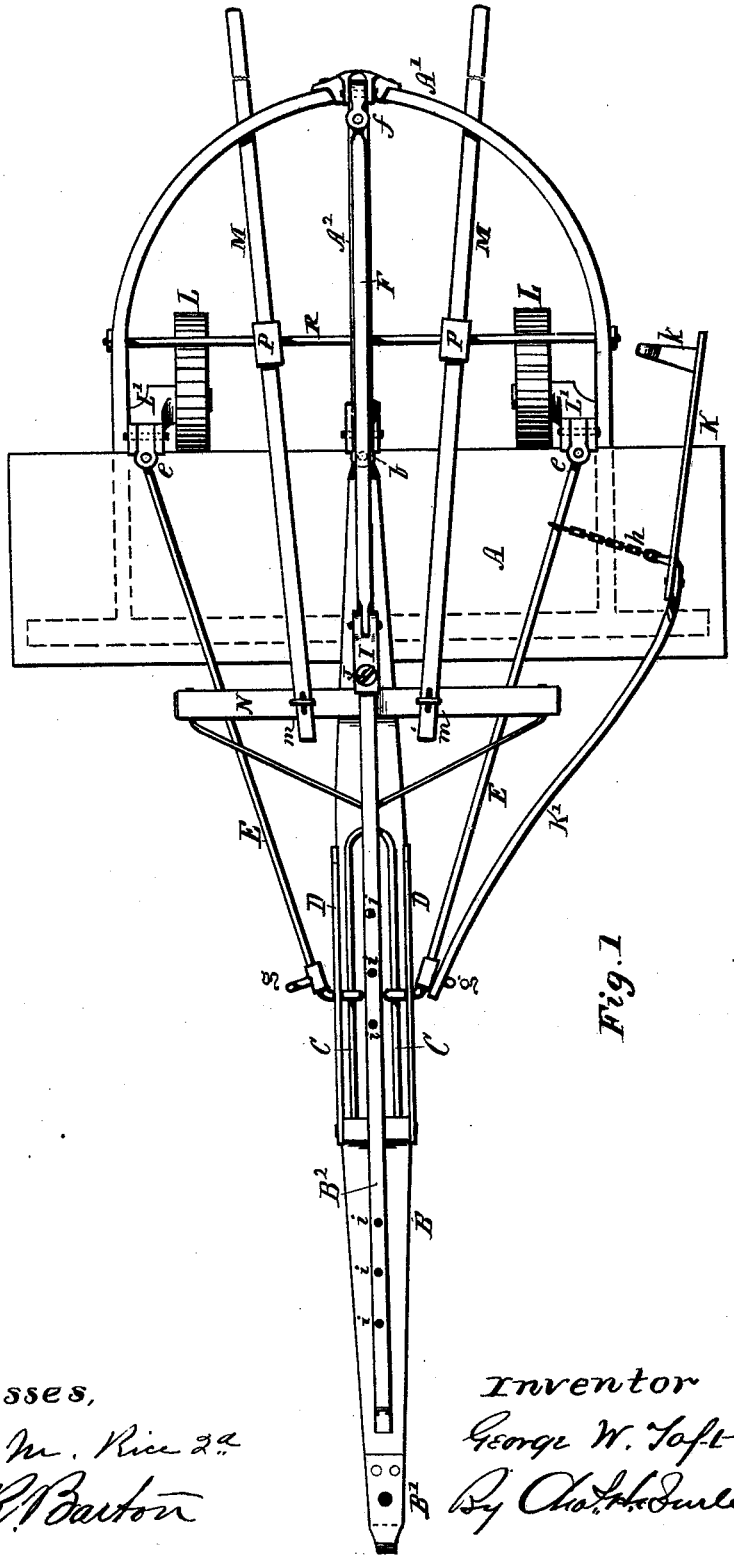

Fig. 1

Witnesses,
Geo. M. Rice 2d
S. R. Barton

Inventor
George W. Taft
By Chas. H. Sumleigh
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3 Sheets—Sheet 2.

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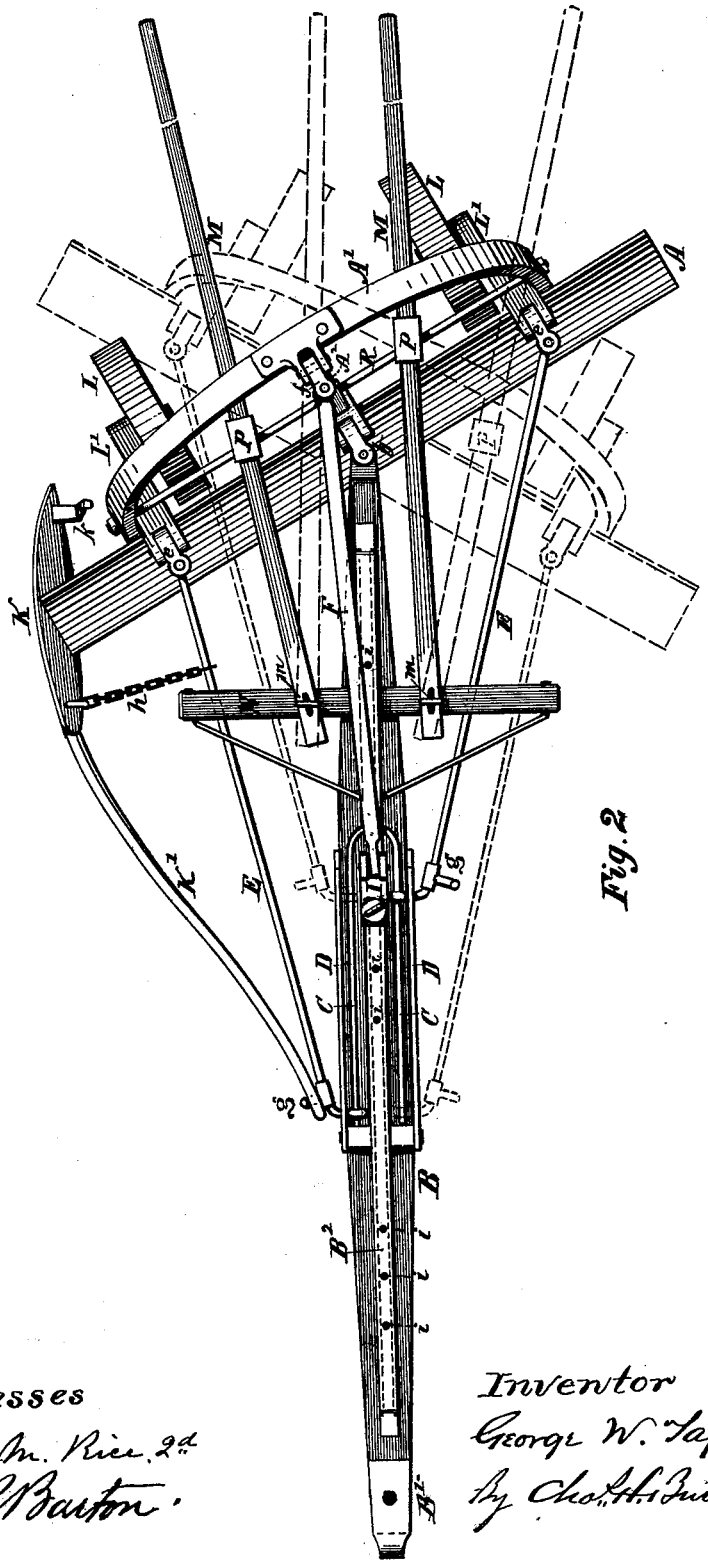

Fig. 2

Witnesses
Geo. M. Rice 2d
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3 Sheets—Sheet 3.

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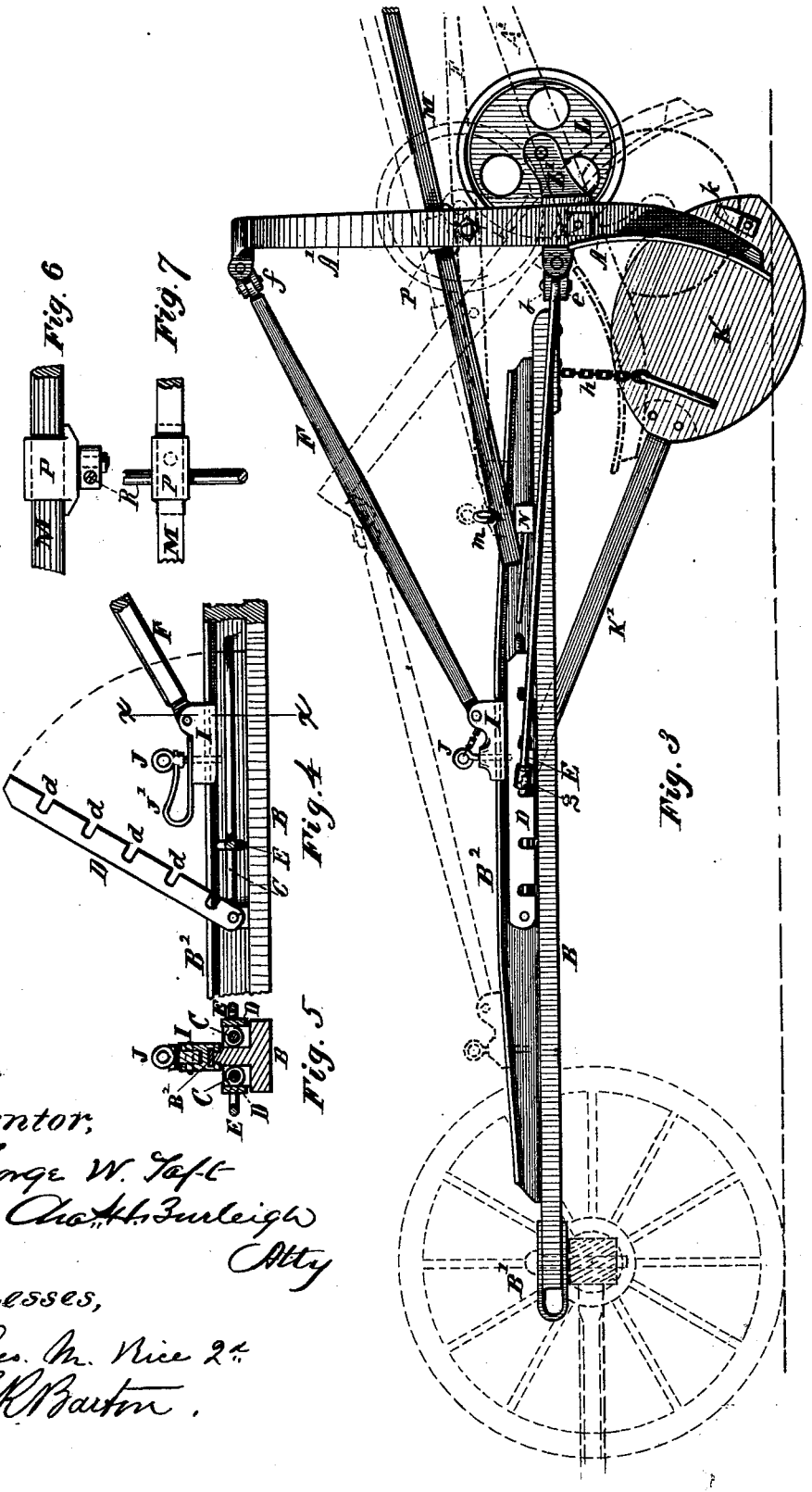

Fig. 6

Fig. 7

Fig. 4

Fig. 5

Fig. 3

Inventor:
George W. Taft
By Chas. H. Burleigh
Atty

Witnesses,
Geo. M. Rice 2d
S. R. Barton.

# UNITED STATES PATENT OFFICE.

GEORGE W. TAFT, OF ABINGTON, CONNECTICUT.

## IMPROVEMENT IN ROAD-SCRAPERS.

Specification forming part of Letters Patent No. **220,042**, dated September 30, 1879; application filed June 6, 1879.

*To all whom it may concern:*

Be it known that I, GEORGE W. TAFT, of Abington, in the town of Pomfret, in the county of Windham and State of Connecticut, have invented certain new and useful Improvements in Road-Scrapers; and declare the following to be a description of said invention, sufficiently full, clear, and exact to enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 represents a plan view of my improved road-scraper with its parts adjusted in position for traveling, as when going to or from the work. Fig. 2 represents a plan view of the same, with its parts adjusted in position for operation as a diagonal scraper, with dotted lines indicating position of its opposite diagonal adjustment. Fig. 3 represents a side view of my improved scraper, showing the blade adjusted to upright working position, with dotted lines indicating the position as adjusted for leveling purposes, and with dotted and broken lines indicating the position as adjusted for traveling. Fig. 4 is a side view of a portion of the draft-tongue, showing the construction of the adjustable connections for the brace-rods. Fig. 5 shows a tranverse section of the same at line *x x*, Fig. 4; and Figs. 6 and 7 show a top and side view of the swiveled loop-joint for retaining the handle-bars.

The object of my invention is to provide a machine for use in building and repairing roads, which shall be strong, light, and durable, capable of ready and various adjustment to meet the requirements of the work, convenient and effective in operation, and easy of conveyance to and from the work. To this end I have embodied in a scraper or road-building mechanism features of improvement such as herein set forth and described.

One feature of my invention consists in a scraping-blade attached to a draft-tongue by means of a series of universal-joint connections and adjustably-connected brace-rods, whereby said scraping-blade is rendered capable of adjustment in any desired direction relative to the line of draft, as more fully hereinafter explained.

Another feature consists in a scraping-blade having a curved or concaved form, hinged or universally jointed to a draft-tongue, and provided with an arch or supporting-frame and an adjustably-connected brace-bar for regulating the dip of said blade, substantially as hereinafter described.

Another feature consists in the combination, with the scraping-blade and draft devices, of an adjustable detachable guiding-blade, constructed and arranged for operation substantially as hereinafter set forth, for sustaining side pressure on the machine when the scraping-blade is used in diagonal position.

Another feature consists in the arrangement and combination, with the scraper-blade jointed to its draft devices and braced as above indicated, of trucks or traveling-wheels situated at the rear of said blade, and within the limit of its length, or in such position that while said wheels are out of the way, and do not interfere with the working of the scraper, they will be brought underneath it for supporting the machine when the same is adjusted for traveling, as hereinafter explained.

Another feature consists in the construction of the draft-tongue with slideways and locking devices for the retention and adjustment of the brace-connections, as hereinafter described.

Other features consist in the construction and combination of the hand-bar supports; also in the several connecting and adjusting joint-pieces.

These minor features of my invention will be understood from the following detailed description of the construction and operation of parts, the particular subject-matter claimed being hereinafter definitely specified.

In the drawings, A denotes the main scraping-blade, formed preferably of sheet metal, and rigidly secured to a supporting-frame consisting of the arched piece $A^1$ and central upright, $A^2$, and with a horizontal transom-piece across the lower rear part of the blade, the parts being arranged substantially as illustrated in Fig. 1.

The blade A in a full-sized machine may be about five and one-half feet, more or less, in length, and may be re-enforced along its lower edge, if desired, by a hard steel facing, about

four inches in width, riveted or otherwise secured in position. The blade A is made straight longitudinally, but is curved upward or made concaved on its face, so as to present a good cutting-edge along its lower extremity, while its upper portion is in position to impart a forward rolling action to the earth as it is scraped up, so as to prevent clogging, and to work the earth along the diagonal of the blade.

B indicates the draft-tongue, the rear end of which is attached to the central upper part of the blade A, or to the central frame-piece, $A^2$, by a double hinge or universal joint, *b*, while its forward end, $B^1$, is arranged for convenient attachment to an ordinary cart or wagon axle, as indicated in Fig. 3, it being designed that the tongue B should be thus supported when the scraper is in use, the team, of course, being attached to such cart or wagon in the usual manner. If preferred, the tongue B could be arranged so that the team could be hitched directly to said tongue.

The tongue B is provided with a long central guideway, formed in the present instance by a rib or bar of wood, grooved along its upper corners and capped by an overhanging plate or strip of metal, $B^2$, firmly secured in position, while centrally on said tongue, at either side of said guideway $B^2$, are short rods or guideways C C, firmly fixed in position, and parallel therewith are arranged latches or locking-bars D D, pivoted at their ends so as to swing upward, in the manner indicated in Fig. 4, and furnished along their lower edges with a series of recesses, *d*, to correspond with the several positions of diagonal adjustment.

E E indicate draft-rods or braces extending from near the ends of the blade A to the tongue B. The forward ends of said rods E embrace the rods or guideways C, to which they are securely retained, while being free to slide back and forth thereon. The rear ends of the rods E are joined by double hinges or universal joints *e* to the respective flanks of the scraper-blade A, at or near the junction therewith of the arch-frame $A^1$, the three universal joints *e b e* being in line with each other and on a line parallel with the blade A, as indicated.

The recesses *d* of the latch-bars D, when down, embrace the necks of the draft-rods E, and thus lock the parts firmly at any adjusted position.

F indicates a top brace-bar, having its rear end connected by a double hinge or universal joint, *f*, to the central upper part of the arch $A^1$, while its forward end is pivoted to a slide piece or casting, I, movable upon but securely retained to the guideway $B^2$, which slide I is provided with a catch or locking bolt, J, that fits into holes or recesses *i*, formed in the guide-plate $B^2$, for locking the parts at any adjusted position. If desired, the bolt J may be furnished with a spring, as indicated at J′, Fig. 4, or otherwise, for pressing it into the holes *i*. By changing the position of the slide I along the tongue, the dip or forward pitch of the blade A is varied, while the diagonal adjustment of said blade is effected by changing the position of the draft-rods or braces E to the respective recesses *d* of the locking-bars D, the brace at one side being set backward, while that at the other side is set forward, and vice versa.

K indicates an auxiliary blade, which I term the "land-side" or "guiding-blade." Said blade serves for resisting side pressure and preventing the machine from being crowded out of position by the action of the earth-pressure when the scraping-blade is used in diagonal position. The land-side K consists of a flat oval blade, made substantially in the form shown, with supporting-bar K′, having its rear end rigidly secured thereto, while its forward end is adapted to be connected or retained by a bolt or hook, *g*, at the forward end of the draft-rod E.

A short chain, *h*, having a hook at its end, serves to attach the blade K to the rear portion of the rod E, in such manner that said blade will be retained in upright position against the end of the main blade A. The land-side blade K, by cutting into the earth along its lower edge, guides the machine in a forward direction and prevents it from working toward one side. A reversible stirrup, *k*, is arranged near the rear end of the guide-blade K, upon which the operator can place his foot, and, by throwing his weight thereupon, increase the holding or guiding power of the blade K, if desired.

The bar K′ may be made slightly flexible, so as to spring near its front end, and thus permit the blade K to accommodate itself to the position of the end of the scraping-blade A in any of its adjusted positions. The forward end of said bar K′ being connected to the draft-rod E, its position, of course, follows the adjustment of the scraping-blade. This land-side blade K can be attached at either the right or left hand side of the machine; or it may be wholly detached and laid aside when desired, as when the machine is used for leveling off the road-surface, or when used as a square drag-scraper.

L L indicate trucks or traveling wheels, which are journaled on standards L′, secured to the upper rear part of the scraping-blade A near the connections of the draft-rods E. In the present instance the wheel-standards and draft-rod connections are made in the same piece or casting; but separate pieces could be used, if preferred. The wheels L are of small diameter, and are so placed that they are within the limit of the length of the blade or within the line of cut when said blade is used in a diagonal position, so that the end of the blade A can be run close against a rock or bank without the wheels interfering therewith. The wheels L do not rest upon the ground excepting when the machine is adjusted for traveling—that is, with the arch $A^1$ thrown backward toward a horizontal position.

M M indicate the handle-bars for governing

the machine. Said bars secured at their forward ends to the cross-bar N on the draft-tongue B (or to the tongue itself, if preferred) by detachable lock-connections *m*, while at their central portion they are held by swiveled loops or eye-bearings P on the bar or rod R, arranged across the arch $A^1$ at a short distance above the top of the blade A, and parallel therewith. The loops or eye-bearings P can slide freely on the handle-bars, and can turn in any direction, so that the various adjustments of the scraper can be effected without cramping at the connecting-joints.

By unlocking the connection at *m* the handle-bar M can readily be taken out and inserted through the opening of the wheel, for use as a hand-spike or lever for raising one side of the machine, or for other similar uses.

This machine is adapted for use in building and repairing roads, excavating for foundations, filling trenches, and other similar purposes where earth is to be moved but short distances.

In the operation of road-making the scraping-blade is adjusted to a position diagonal with the line of draft, either right or left, as indicated in Fig. 2, the desired degree of inclination being attained by means of the series of recesses *d* in the locking-bars D, said bars D being raised, as in Fig. 4, to permit the ends of brace-rods E to move along the guideways C. The desired degree of dip or pitch of the blade A is attained by arranging the slide-casting I with its lock-bolt in one of the central series of holes *i* on the guideway $B^2$. The scraper being thus properly adjusted, it is drawn forward lengthwise of the road in the ordinary manner, with the advanced end of the blade A in the gutter, so as to scrape up the earth, which, by the action of the curved blade A, is rolled forward and inward until it discharges onto the road-bed from the inner or rearward end of said scraping-blade A, the operation being continuous as the machine is drawn forward.

For excavating, the scraper may be used with the blade adjusted at right angles, or nearly so, with the line of draft.

For leveling off the surface of the road, the machine is adjusted with the arch-frame $A^1$ thrown forward toward the tongue B, as indicated by dotted lines, Fig. 3, the slide I being locked at one of the forward series of holes *i* on the guideway $B^2$, thus setting the blade A at a backward angle, so that it will press down and flatten the earth as it is drawn over the road-surface.

When traveling to or from work the arch-frame $A^1$ is thrown back, as indicated in Fig. 1, and by dotted and broken lines, Fig. 3, thereby raising the forward edge of the blade A and bringing the wheels L into position on the ground for supporting the weight of the machine.

Among the advantages incident to my invention may be mentioned the comparative lightness and strength of the machine and the ease and facility with which it can be operated.

The draft-rods and tongue being connected to the blade by a series of universal joints, and the rods or braces adjustably attached to the tongue, permit free adjustment to any degree of angularity without relieving any of said parts from bearing their due proportion of strain when in use, and without interfering with directness of draft; also, the ease with which adjustment can be effected and the facility of moving from place to place on its own trucks without the necessity of a car or other cumbersome device attached thereto; and, further, the convenience of guiding and overcoming sidewise action by aid of the land-side blade, while the curved form of the scraping-blade effects the transfer of the earth by a rolling instead of dragging action, and prevents clogging in front of the blade.

What I claim as of my invention, and desire to secure by Letters Patent, is—

1. In an earth or road scraper, a scraping-blade attached to a draft-tongue by a series of universal-jointed connections and adjustably-connected draft or brace rods, whereby adjustment of the scraping-blade to any desired angle relative to the line of draft can be effected, substantially as hereinbefore set forth.

2. In a road-scraper, the curved scraping-blade hinged or connected by universal joints at its upper edge to the draft devices, and having an upward-projecting arched supporting-frame provided with a brace or bar hinged to the upper part of said arch-frame, and adjustably connected with the draft-tongue, whereby the supporting-frame and scraping-blade can be retained at any desired forward or backward inclination, substantially as set forth.

3. In a road-scraper, in combination with the main scraping-blade, a detachable guiding-blade fixed to the rear end of a supporting bar or tang, the forward end of which is flexible or flexibly connected with the frame or draft devices, said blade being adapted for retention in upright position against the end of the main scraping-blade for cutting into the soil and guiding the machine in a forward direction, substantially as hereinbefore set forth.

4. In a road-scraper, the combination and arrangement, with the scraping-blade hinged or universally jointed to its draft devices to have a forward and backward adjustment, of trucks or traveling wheels located at the rear of said blade and within the limit of its length, substantially as hereinbefore described.

5. In a road-scraper, the combination, with the draft-tongue B and scraping-blade A, of the side draft-rod E, universal-joint connections *e b e*, guideways or rods C, and recessed locking-bars D, substantially as and for the purposes set forth.

6. In a road-scraper, the combination, with the draft-tongue B and scraper-blade A, having the arched frame $A^1$, of the long guideway $B^2$, slide-piece I, with locking-bolt J,

brace-bar F, and universal hinged connections *b f*, substantially as and for the purpose set forth.

7. In a road-scraper, the combination, with the draft-tongue B and scraper-blade A, having frame A' and universal-joint connections, of the handle-bars M and swiveled loop connections P, substantially as and for the purpose set forth.

8. In a road-scraper, the combination, with the main scraping-blade A and draft-rod E, of the guiding-blade K, with supporting-bar K' and chain *h*, substantially as and for the purposes set forth.

9. The combination, with the guiding-blade K, of the foot-stirrup *k*, for the purposes set forth.

10. In a road-scraper, the combination, with the scraper-blade A and draft-rod connections *e e*, of the standards L' and wheels L, substantially as set forth.

Witness my hand this 26th day of May, A. D. 1879.

GEORGE W. TAFT.

Witnesses:

CHAS. H. BURLEIGH,

S. R. BARTON.