

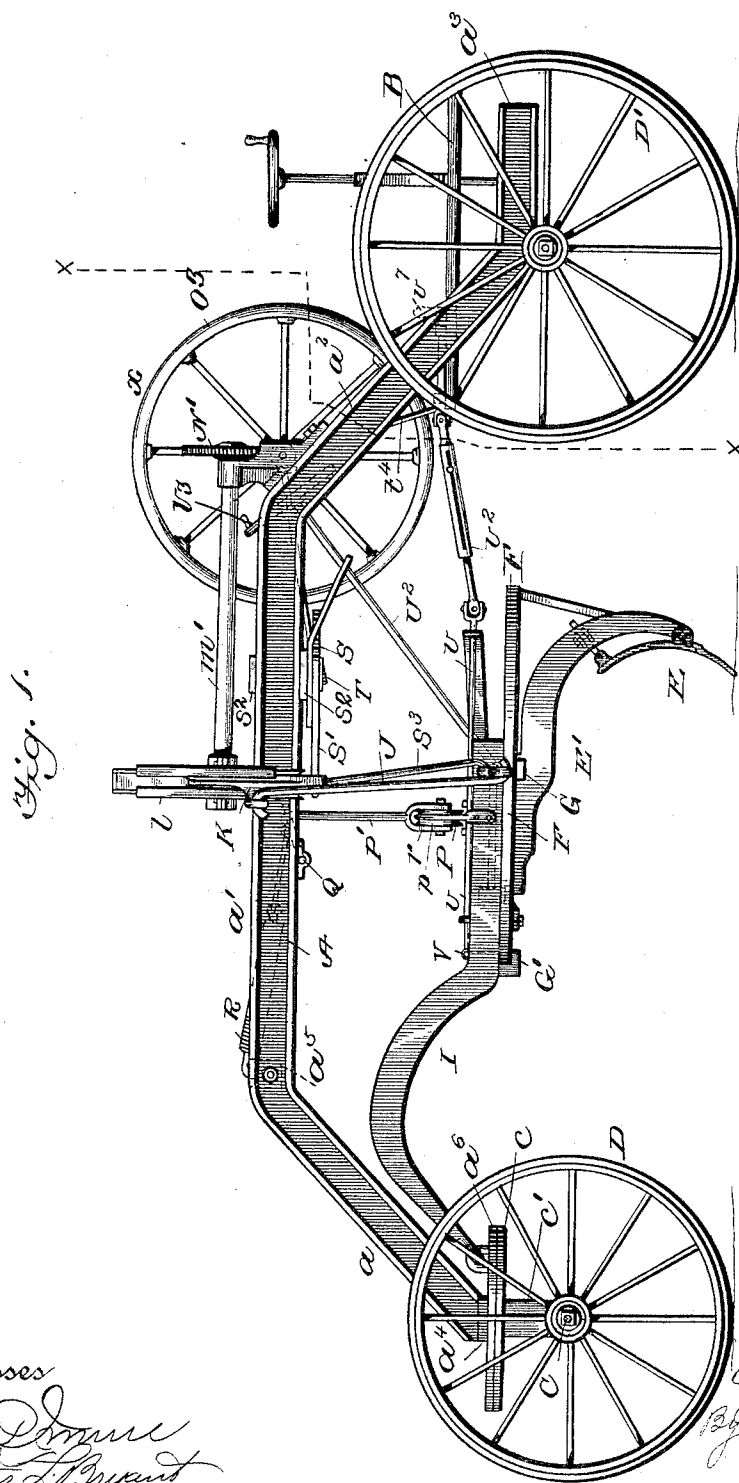
(No Model.)

4 Sheets—Sheet 1.

E. A. WRIGHT.
ROAD SCRAPER.

No. 581,642.

Patented Apr. 27, 1897.



Witnesses

John D. Moore
Arthur L. Bryant

Inventor

Edgar A. Wright

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Attorney

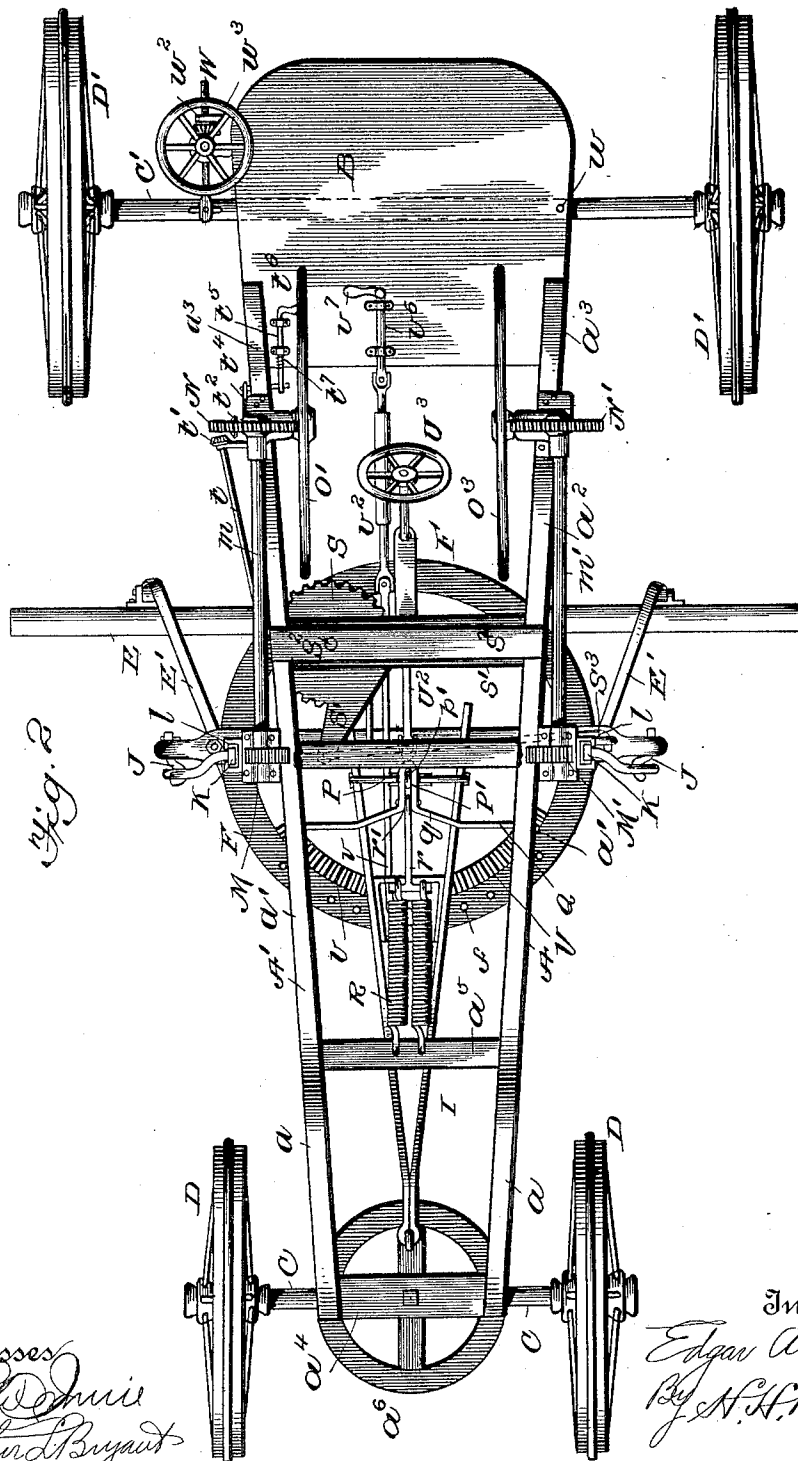
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4 Sheets—Sheet 2.

E. A. WRIGHT.
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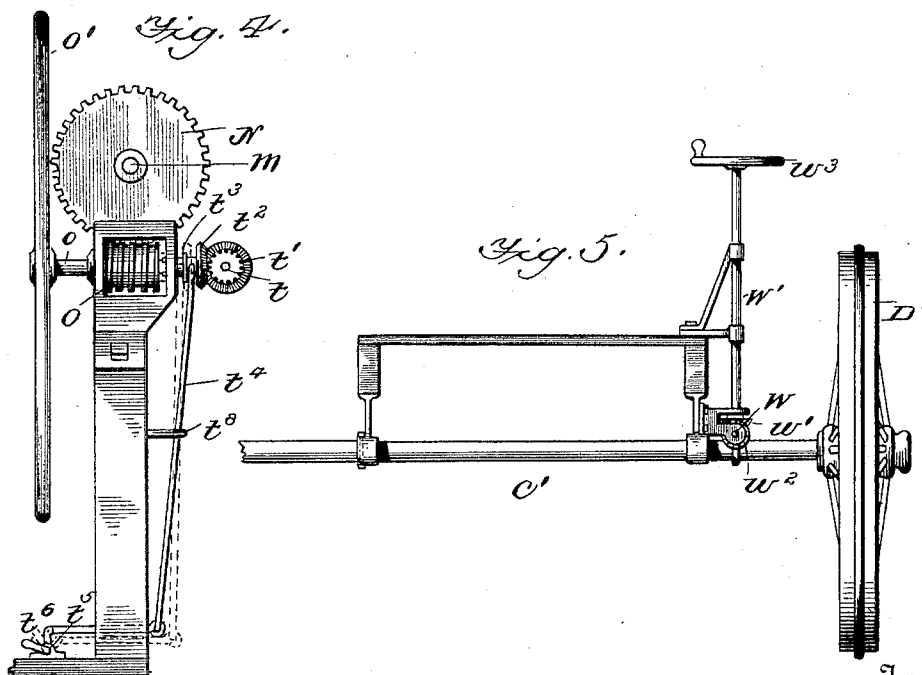
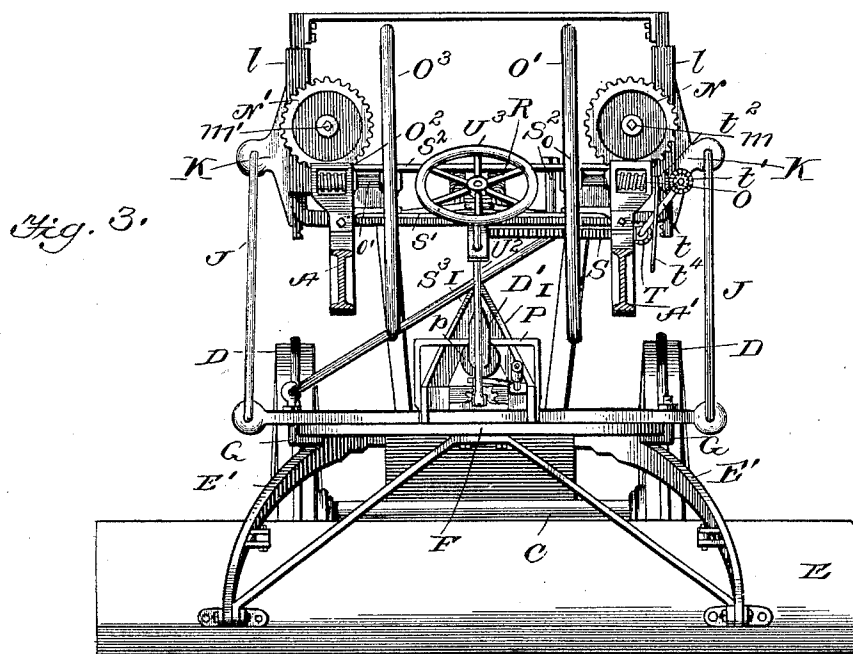
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4 Sheets—Sheet 3.

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Witnesses

Mrs Anne
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Fig. 5.

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UNITED STATES PATENT OFFICE.

EDGAR A. WRIGHT, OF CANTON, OHIO, ASSIGNOR TO THE AULTMAN COMPANY, OF SAME PLACE.

ROAD-SCRAPER.

SPECIFICATION forming part of Letters Patent No. 581,642, dated April 27, 1897.

Application filed October 12, 1893. Serial No. 608,620. (No model.)

To all whom it may concern:

Be it known that I, EDGAR A. WRIGHT, a citizen of the United States, residing at Canton, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Road-Scrapers; and I do 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, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to improvements in road-scraping machines of that class which employ a wheeled supporting-frame and a scraping-blade adapted to be adjusted vertically with relation to said frame.

Much trouble and inconvenience have been experienced in handling and operating machines of this class as heretofore constructed because of the great weight incident to the scraper-blade and its supporting parts. It is often necessary to quickly vary the position of the scraper at one or both ends vertically, and this is a severe task, particularly if the blade is in the ground and is being subjected to draft or strain. In the attempts to permit such quick adjustment use has been made of numerous sorts of power-saving devices, such as worm-gearing, various forms of levers, and the like; but it still remains the fact that the accomplishing of these movements of the blade by the operator requires the exertion of considerable strength and an appreciable period of time.

One of the principal objects of the present invention is to provide a machine of the character referred to with means for automatically attaining much of the work of upward adjustment or lifting of the scraper.

In the drawings, Figure 1 is a side elevation of a road-scraping machine embodying my improvements. Fig. 2 is a plan view. Fig. 3 is a vertical cross-section on the line *x x*, Fig. 1, looking forward. Fig. 4 is a detail view illustrating in rear elevation portions of the mechanism. Fig. 5 is a detail view of the rear axle and its adjusting devices. Fig. 6 is a side elevation of a portion of the machine, illustrating more particularly

the shifting mechanism disclosed by Fig. 4. Fig. 7 is a plan view on the line 7 7 of Fig. 6.

Like letters of reference indicate corresponding parts in the several figures of the drawings.

The operative parts of the mechanism are shown as being supported upon a main frame, the principal parts of which consist of two longitudinal bars *A A'*, these diverging somewhat from the front end toward the rear and each being shaped so as to have a front upwardly-extending part *a*, an approximately horizontal central portion *a'*, and a rear inclined part *a²* with a backward-projecting arm *a³*. These main longitudinal bars are connected by cross-bars of any suitable number and character, such as that at *a⁴* at the front end, that at *a⁵* at an intermediate line, and others that will be referred to.

The main frame is supported upon a running-gear comprising the front axle *C*, with wheels *D*, and the rear axle *C'*, with its wheels *D'*.

The front axle *C* is pivotally connected with the front end of the main frame, the latter having an expanded ring *a⁶*, which rests upon a similar opposing ring *c*, carried by the axle and supported thereon by means of a standard *c'*, there being a king-bolt of the ordinary sort for joining the parts together.

At the rear the main frame rests upon the axle *C'* and may be adjustably connected thereto in the manner to be described below.

The platform, upon which the operator stands, is indicated by *B*, it being supported by the rear part of the main frame in a suitable position.

Upon the supporting and transporting devices referred to is arranged the scraper-blade *E*. This may be of any of the common forms or of any preferred sort. That shown is concavo-convex in cross-section and is substantially straight from end to end. It is connected by horizontal pivots to the draft-bars *E'*, which are curved downward and secured to the rear side of the curved scraper-blade and extend forward over the top thereof on converging lines to the part which carries them. The latter is indicated by *F*, and consists of an expanded ring-like plate, to which the aforesaid bars or arms *E'* are bolted.

The scraper-supporting part at F is suspended and guided by means of two clips or flanged bolts G, one on each side, and a third clip or flanged bolt or lug G' at the front, which clips are secured to the draw-frame of the scraper, the latter consisting principally of the bar or bars I and one or more cross-bars.

J are links connected at the lower end to the scraper draft-frame, and at their upper ends are hinged to vertically-adjustable plates K, having rack-bars fitted in guides ll , and secured to the frame-bars A A'. Pinions M M' are provided for moving said bars K, they being secured to shafts $m m'$. At the rear end of the shaft m there is a worm-wheel N, which engages a worm O, loosely mounted on a short shaft o , which carries at its inner end an expanded hand-wheel O' in proximity to the platform B. At the rear end of the shaft m' is arranged a worm-wheel N', which engages a worm O², fast on a short shaft o' , which carries at its inner end a hand-wheel O³.

P is a stirrup or loop having its ends secured to the draft-frame of the scraper and extending somewhat upward therefrom, it being arranged to provide a horizontal guide-bar at the top of suitable length. P' is a link loosely connected with the cross-bar of this loop or stirrup, it preferably having a roller or a wheel p interposed between it and the loop. The link extends up and is connected to a rock-shaft Q, the latter having secured to it or being so shaped as to provide a crank-arm q .

R indicates one or more springs, two being shown. Their stationary ends are secured to the cross-bar a^5 of the main frame and their opposite ends are by means of a link r connected to a crank-arm on the rock-shaft Q, preferably to the above-mentioned arm q , the pivot or axis of the connection being at r' , while that of the link P' is at p' .

It will be seen that the springs, the rock-shaft, and the link P' can be so arranged as to exert upon the scraper and its carrying devices an upward draft or tension, and, further, that they can be so related that this draft or tension shall be increased or decreased to correspond with the different positions of the scraper. Ordinarily they will be so related that when the scraper is down and in the working position the line from the spring to the pivot r' will be slightly above the line from the spring to the axis of the rock-shaft Q, as shown in Fig. 1. Consequently while there will be a slight suspending tension exerted by the springs R upon the scraper it will be reduced nearly to its minimum; but if the parts are so related it will be seen that as soon as the operator starts the pinions M M to rotate and lift upward the racks and links J the rock-shaft Q turns, so that a powerful leverage can be exerted by the springs R, and though the tension of the latter decreases the lifting effect or force increases as the crank-arm approaches the vertical position. Hence

the scraper when at work is not interfered with by the spring when it is in the ordinary working position, but at the same time the spring is in readiness to immediately give great assistance to the operator in effecting a vertical adjustment.

By having the spring connected to the scraper through the medium of devices like the loop P and the link P' or their equivalents it (the spring) will be equally efficient in exerting its upward lift whether both ends of the blade be started in their rising movement or only one of them; and, again, the loop and link permit the swinging or adjusting of the scraper endwise bodily transversely of the machine without requiring that the positions of the springs R should be varied. It will be understood that there can be numerous modifications of this part of the machine without departing from the invention, and the details which are illustrated for varying the tension of the spring for different positions of the scraper can be modified, and the spring can be arranged to act directly if it is not desired to attain the advantages above set forth.

It is believed that the present is the first machine in which is combined an upwardly-acting spring with a scraper-blade which is laterally adjustable and vertically adjustable either at one end independently of the other or at both ends simultaneously.

In other applications, serially numbered 621,646 and 621,647, I have shown and specifically claimed embodiments of some of the features of the present invention differing from that selected for illustration in this case. In the present I have shown my improvements applied to a machine in which the scraper-blade is adjusted laterally by the following devices:

S is a worm-wheel arranged horizontally and mounted on the shaft S², held by the bars $s' s^3$, secured to the main frame. This wheel carries a crank-arm S', which is connected by the link S³ to the scraper-frame.

T is a worm meshing with the teeth of the wheel S and secured to a shaft t . This shaft extends backward toward the operator's platform and is rotated by the following means:

t' is a bevel-wheel on the rear end of the shaft t , it meshing with the bevel-wheel t^2 on the above-mentioned shaft o of the worm O. The wheel t^2 is splined on the shaft o and is connected with a clutch t^3 . The clutch has a shifting lever t^4 . This lever extends through an eye t^5 , secured to the rearwardly-inclined portion a^3 of the side bar A' of the main frame. The loop or eye t^5 serves as a pivot for the clutch-lever t^4 , but does not engage with said lever so as to prevent all longitudinal movement thereof. At the lower end the lever is connected to a rock-shaft t^6 , having a foot-piece or treadle t^6 for moving it in one direction and a spring t^7 for returning it. The spring normally holds the clutch and bevel t^2 connected thereto in such position that the said wheel t^2 is in engagement with

the worm O, and the latter is connected to the shaft *o* to rotate therewith; but when the operator desires to use the hand-wheel O' for moving the scraper laterally and horizontally instead of vertically he places his foot on the treadle *t*⁶ and by pressing it downward moves the clutch away from the worm O and bevel *t*² into engagement with the bevel *t*'. The lower end of the clutch-lever *t*⁴ is, as shown, loosely connected with the rock-shaft *t*⁵, and the pivot-loop *t*⁸ permits the necessary longitudinal movement of the lever, the clutch-engaging fingers being sufficiently long to remain in engagement with the clutch whether the parts be in the position indicated in full lines in Fig. 4 or in that indicated in said figure in dotted lines. Thereupon any rotation of the wheel O' will cause a horizontal movement of the scraper without affecting it vertically; but ordinarily the parts are held in such position that the worm O is clutched to the shaft *o*, and the motion of the wheel O' will actuate the worm O and the lifting apparatus.

The scraper-plate F in the mechanism illustrated can be adjusted axially by means of a series of gear-teeth U, formed on the plate or on a bar secured thereto, and a pinion carried by a shaft coupled to an inclined shaft U², which extends to a point near the platform and is provided with a hand-wheel U³.

The scraper and the plate F are locked in any position desired by means of the bolt or pin V. This is carried by a rock-shaft *v*, which is coupled by a shaft *v*² to a rock-shaft *v*⁶, mounted on the platform and having a foot-piece or pedal *v*⁷.

The rear axle in the drawings is shown as adapted to be adjusted relative to the longitudinal lines of the machine as follows: This axle is pivoted by a vertical bolt or pin at *w*. The wheel-adjusting devices consist of threaded rod W and a nut at *w*², the latter being connected to or formed with a bevel-wheel. With this wheel another at *w*¹ engages, the latter being secured to a vertical shaft W', which has at its upper end a hand-wheel *w*³, conveniently arranged for reaching from the platform.

The worms O O² and the worm-wheels N N' not only serve as a means for moving the scraper-blade up or down, but also as a positive lock for holding the vertically-adjustable parts in any position in which they are put.

For the purpose of showing a complete machine I have herein illustrated and described my improvements as combined with features of construction and arrangement of parts to which I make no claim. Thus I am aware that it has been heretofore proposed to so mount and support a scraper-blade as to adapt it to be adjusted vertically, laterally, and about a vertical axis, and that my improvements are applicable to other forms of mechanism than that herein illustrated for accomplishing said movements of the scraper-blade, the particular mechanism herein illustrated

being, as I believe, the invention of Ortus E. Moats.

I believe myself to have been the first to have provided means whereby a single hand-wheel can be utilized to actuate both the devices for adjusting the scraper-blade vertically and the devices for adjusting said blade laterally.

The devices herein illustrated and described for adjusting the rear axle I also believe to be of the invention of said O. E. Moats, and therefore make no claim therefor.

What I claim herein is—

1. In a road-scraping machine, the combination, with the wheeled supporting-frame and the scraper-blade adjustable vertically and also around a vertical axis, of a lifting-spring adapted to have its tension increased as the blade descends and to act with reduced force on the scraper when the latter is in working position, and means for positively adjusting the scraper vertically, substantially as set forth.

2. In a road-scraping machine, the combination, with the wheeled supporting-frame and the scraper-blade adapted to have its ends adjusted vertically either one independently of the other or both simultaneously, of a lifting-spring interposed between the scraper and the supporting-frame and adapted to act with reduced force on the scraper when the latter is in working position, and means for locking the scraper in different positions vertically, substantially as set forth.

3. In a road-scraping machine, the combination, with the wheeled supporting-frame and the scraper adjustable vertically, of the lifting-spring interposed between the scraper and the supporting-frame, and means for positively lifting and lowering the spring about a horizontal axis and fastening it in either of several vertical positions, substantially as set forth.

4. In a road-scraping machine, the combination, with the wheeled supporting-frame and the vertically-adjustable scraper, of the lifting-spring mounted on the supporting-frame to rock about a transverse axis, a pivoted connection between the spring and the scraper, and means for locking the scraper in either of several positions vertically, substantially as set forth.

5. In a road-scraping machine, the combination, with the wheeled supporting-frame, and the vertically-adjustable scraper, of a lifting-spring, a connecting device between the spring and scraper adapted to apply the force of the spring at either of several points on lines transverse of the machine and means for relieving the scraper of spring tension when in working position, substantially as set forth.

6. In a road-scraping machine, the combination, with the wheeled supporting-frame, and the scraper adjustable laterally relatively to said frame, of one or more lifting-springs, and a relatively stationary connect-

ing device between the springs and the scraper, and adapted to cause the spring to act on the scraper with decreased power when the blade is in working position, substantially as set forth.

7. In a road-scraping machine, the combination, with the wheeled supporting-frame, and the scraper-blade, of the lifting-spring, a power-transmitting device connected to the spring, and a frame or carrier for the scraper adjustable laterally independently of said power transmitter and while in engagement therewith, substantially as set forth.

8. In a road-scraping machine, the combination, with the wheeled supporting-frame, and the vertically-adjustable scraper, of a lifting-spring, connected to the scraper, and means connected to the spring for reducing the draft thereof on the scraper when the latter is in position for operation, substantially as set forth.

9. The combination with the wheeled supporting-frame, and the scraper, of a lifting-spring connected to the scraper, and means interposed between the spring and the scraper to receive the tension of the spring and relieve the scraper of a part of said tension when the scraper is in an operative position, substantially as set forth.

10. The combination with the supporting-frame and the vertically-adjustable scraper, of a crank or eccentric, means connecting said eccentric with the scraper for lifting it, and a spring interposed between the said crank and the main frame, substantially as set forth.

11. The combination with the supporting-frame, and the vertically-adjustable scraper, of the rock-shaft mounted on the frame, the spring connected to the frame and connected to said rock-shaft eccentrically, and means connecting the scraper with the rock-shaft eccentrically, substantially as set forth.

12. The combination of the supporting-frame, the vertically-adjustable scraper, the lifting-spring, the crank-arm or eccentric connected to the spring, and means connecting the crank-arm to the scraper, said parts being arranged substantially as described to have the line of draft of the spring nearer the plane of the axis of the crank-arm when the scraper is in its operative position, and farther from said plane when the scraper is elevated, substantially as set forth.

13. The combination with the supporting-frame and the scraper adjustable both vertically and laterally relatively to the supporting-frame, of the lifting-spring which is stationary transversely of the supporting-frame, and means connecting said spring with the scraper, substantially as set forth.

14. The combination with the supporting-frame, and the scraper vertically and laterally adjustable, of the lifting-spring, and the connecting devices having the loop P, and the link P', substantially as set forth.

15. The combination with the supporting-

frame, and the scraper vertically and laterally adjustable, of the lifting-spring, the connecting devices having one or more vertical bars P', and a horizontal bar with which the vertical bar has sliding connection, substantially as set forth.

16. In a road-scraping machine, the combination with a wheeled supporting-frame, and a vertically-adjustable scraper, of a lifting-spring interposed between the supporting-frame and the scraper-blade and adapted to be adjusted about a transverse axis in relation both to the frame and blade as the latter is adjusted vertically, and means for holding the blade in any adjusted position.

17. In a road-scraping machine, the combination of a wheeled supporting-frame, a vertically-adjustable scraper-blade, a lifting-spring connected to the frame and blade and adapted to be adjusted bodily in relation to the frame, as the blade moves vertically, means for reducing the tension of said spring on the blade when the latter is in working position, and means for locking the blade in any adjusted position.

18. In a road-scraping machine, the combination of a wheeled supporting-frame, a vertically-adjustable scraper-blade, a lifting-spring extending longitudinally of and having one end connected to the supporting-frame, a cranked lever mounted on the supporting-frame, connections between said lever and the scraper-blade, and independent connections between said lever and the lifting-spring, substantially as and for the purpose specified.

19. The combination with the supporting-frame, and the vertically-adjustable scraper, of the suspending links J, adapted to swing laterally and be adjusted vertically, means for lifting the said links and holding them at different points, means for connecting said links to the scraper, one or more lifting-springs, and means for connecting said spring or springs to the links and to the scraper, and permitting free lateral movement of the scraper without varying the position of the lifting-spring, substantially as set forth.

20. In a road-scraping machine, the combination with the supporting-frame and the scraper, of means for adjusting the scraper vertically, means for adjusting the scraper laterally, of the supporting-frame in the direction of the length of the scraper, and a hand-wheel adapted to be connected with either of the said adjusting means, substantially as set forth.

21. The combination with the supporting-frame, and the scraper, of devices for adjusting the scraper vertically, devices for adjusting the scraper laterally beyond either side of the supporting-frame, a hand-operated mechanism for actuating either of the said adjusting means, and a clutch for throwing the operative mechanism into and out of connection therewith, substantially as set forth.

22. In a road-scraping machine, the combination with a wheeled supporting-frame, a

scraper-blade adapted to be adjusted vertically and laterally, and a shaft having a hand-wheel or operating part and adapted to actuate the devices for adjusting the scraper vertically, of a power-shaft connected with the devices for adjusting the scraper laterally, gearing for driving said shaft, and means for connecting said shaft at will to the aforesaid shaft carrying the hand-wheel, substantially as set forth.

23. In a road-scraper machine, the combination of a wheeled supporting-frame, a scraper-blade adapted to be adjusted both vertically and laterally, a power-shaft, *o*, and a hand wheel or crank for operating said shaft,

of a worm *O* loosely mounted on said shaft and adapted to drive the devices for adjusting the scraper-blade vertically, a shaft, *t*, adapted to actuate the devices for shifting the blade laterally, bevel-gearing connecting said shafts *o*, *t*, and a clutch adapted to connect either the last said gearing or the aforesaid worm to the power-shaft *o*, substantially as set forth.

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

EDGAR A. WRIGHT.

Witnesses:

PRIMUS PHILIPPI,
JAMES L. BUBOUT.