No. 768,645. PATENTED AUG. 30, 1904.

E. A. WRIGHT.

ROAD SCRAPER.

APPLICATION FILED DEC. 6, 1900. RENEWED JAN. 27, 1904.

NO MODEL. 5 SHEETS—SHEET 1.

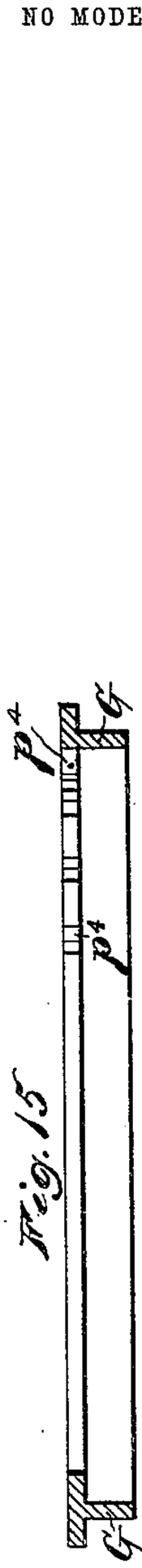

Fig. 15

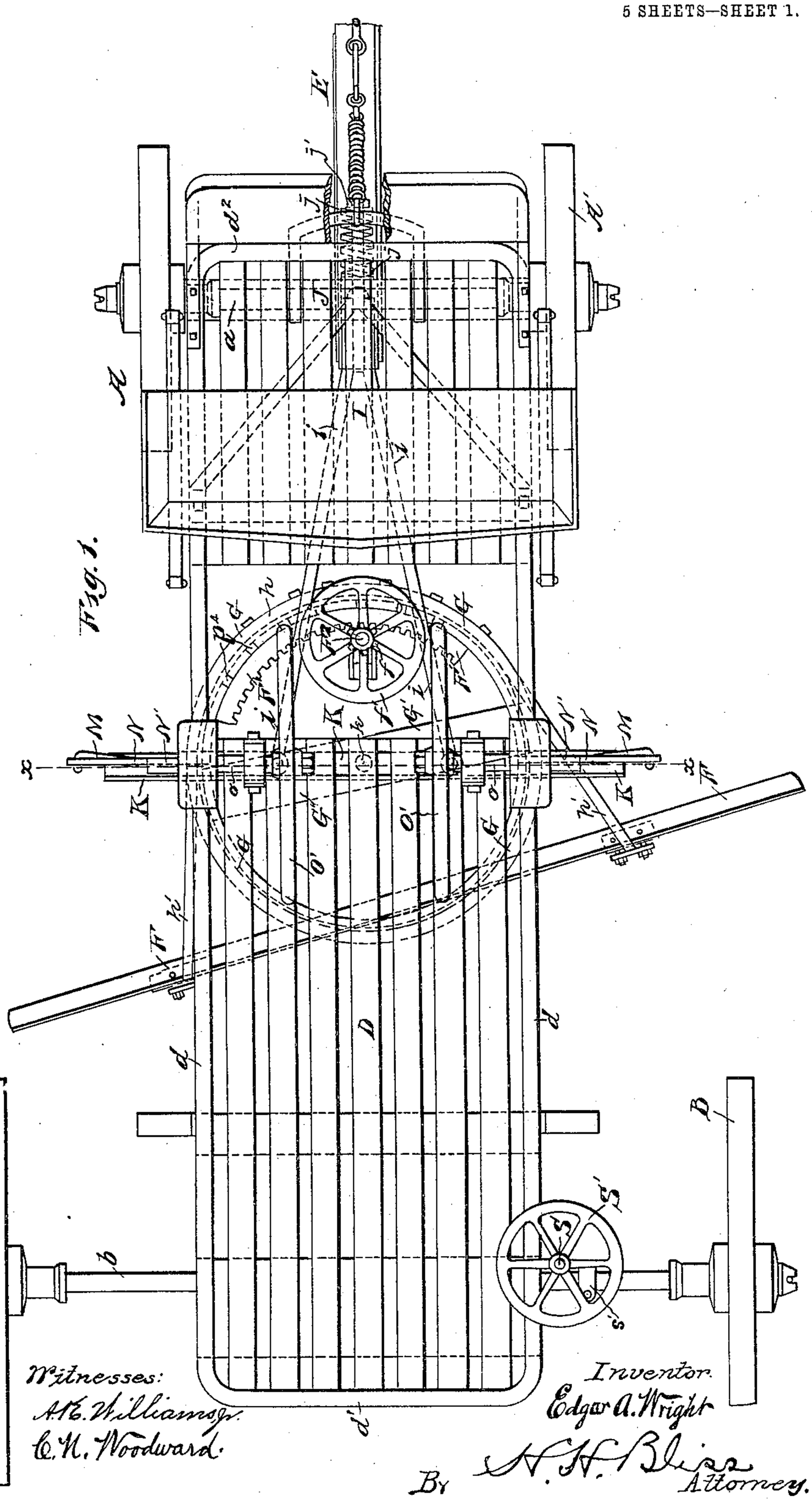

Fig. 1.

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NO MODEL. 5 SHEETS—SHEET 2.

Fig. 16.

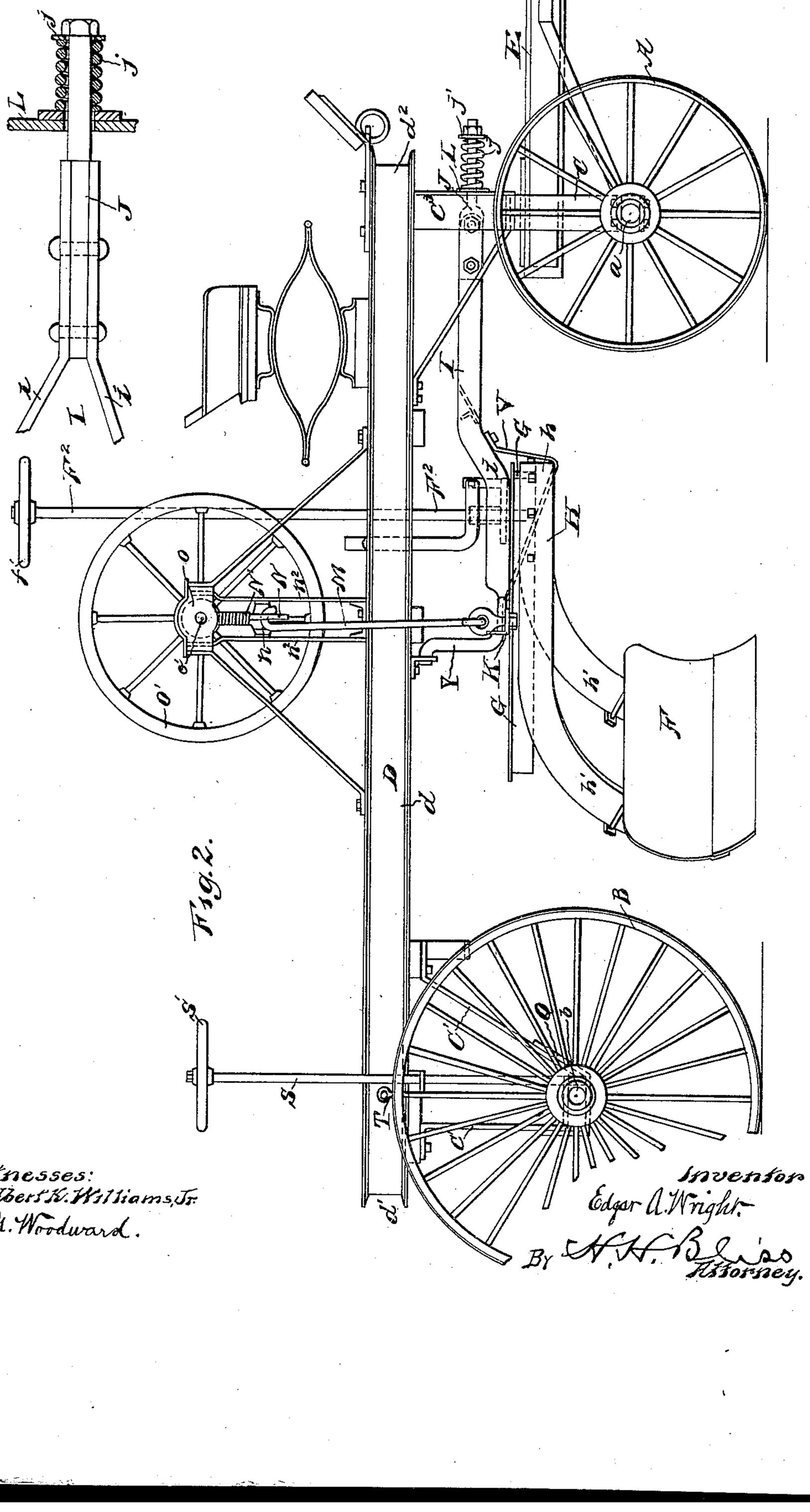

Fig. 2.

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NO MODEL. 5 SHEETS—SHEET 3.

Fig. 3.

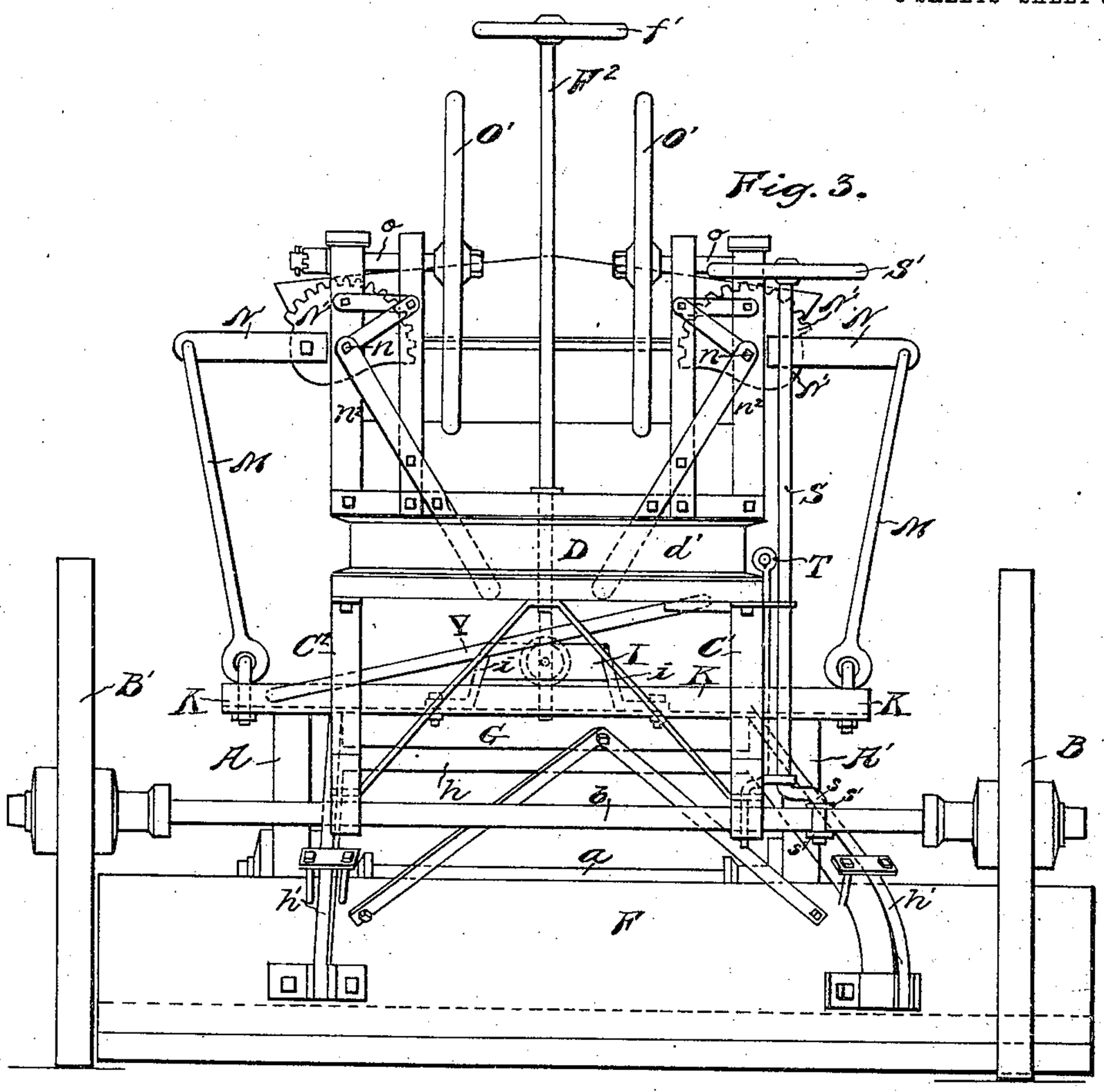
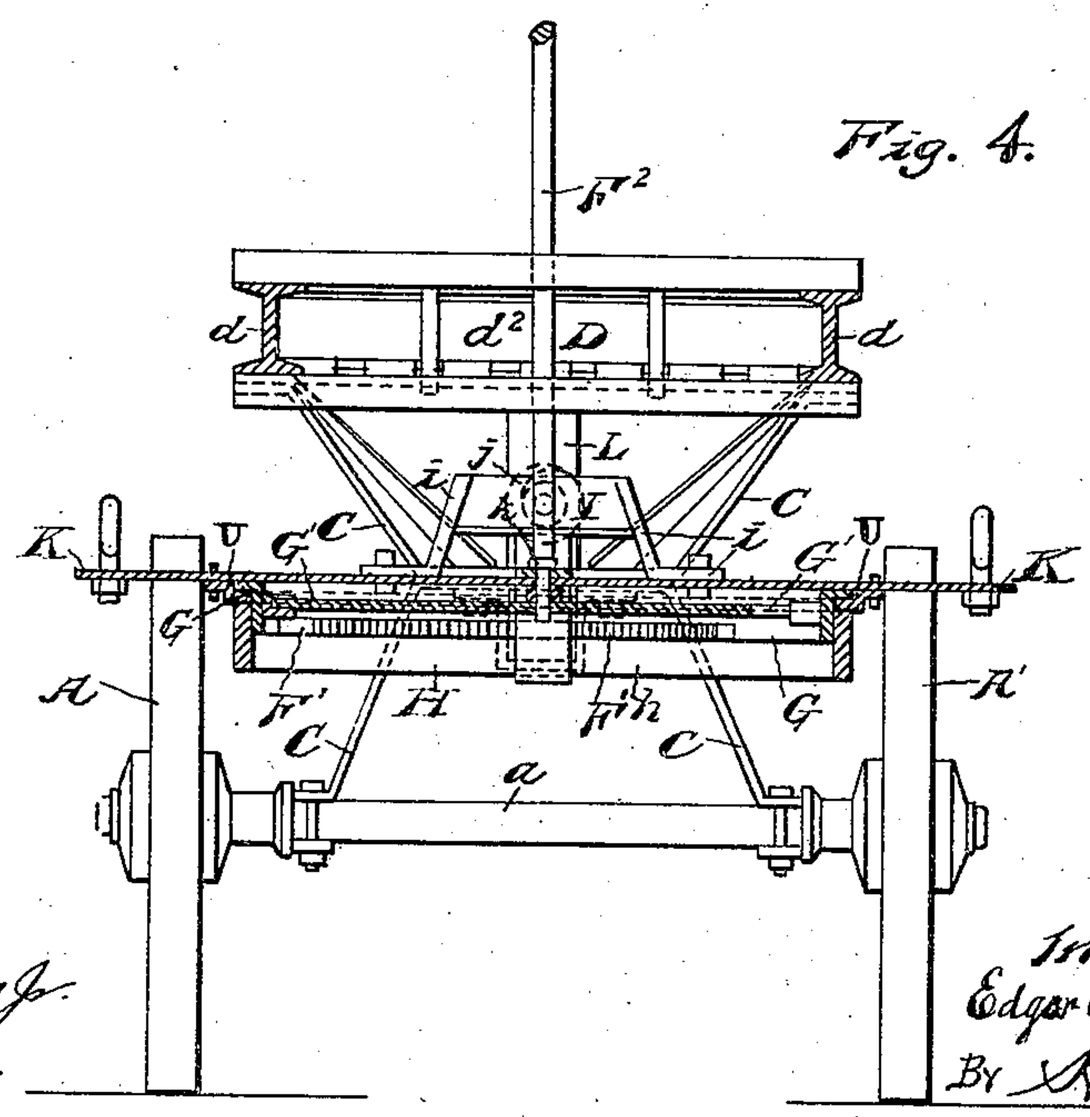


Fig. 4.



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APPLICATION FILED DEC. 6, 1900. RENEWED JAN. 27, 1904.

NO MODEL. 5 SHEETS—SHEET 4.

Fig. 5

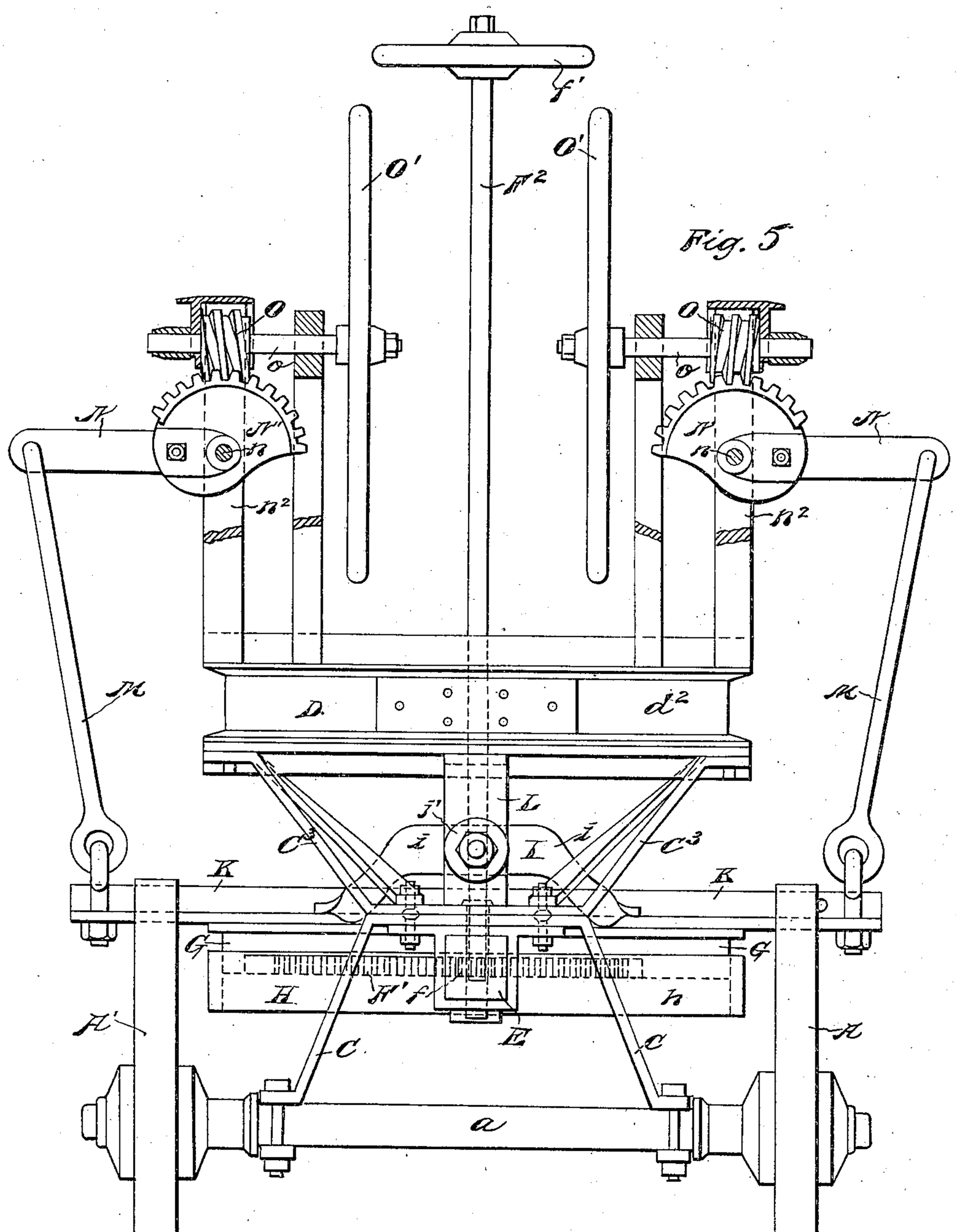
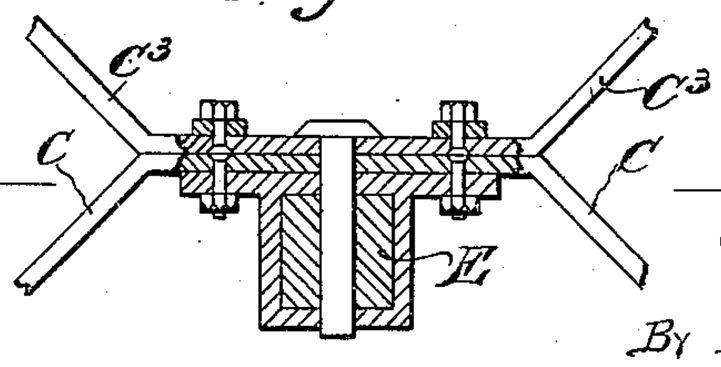


Fig. 14.



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No. 768,645. PATENTED AUG. 30, 1904.

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ROAD SCRAPER.

APPLICATION FILED DEC. 6, 1900. RENEWED JAN. 27, 1904.

NO MODEL. 5 SHEETS—SHEET 5.

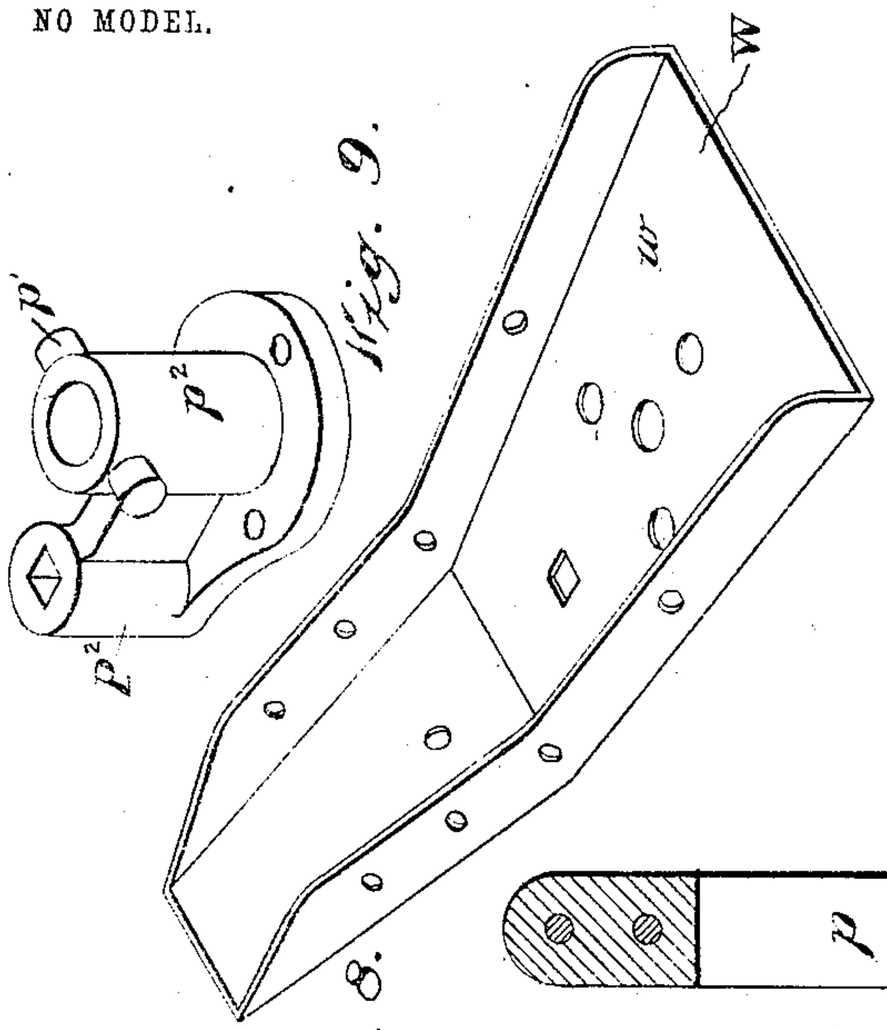

Fig. 9. Fig. 8.

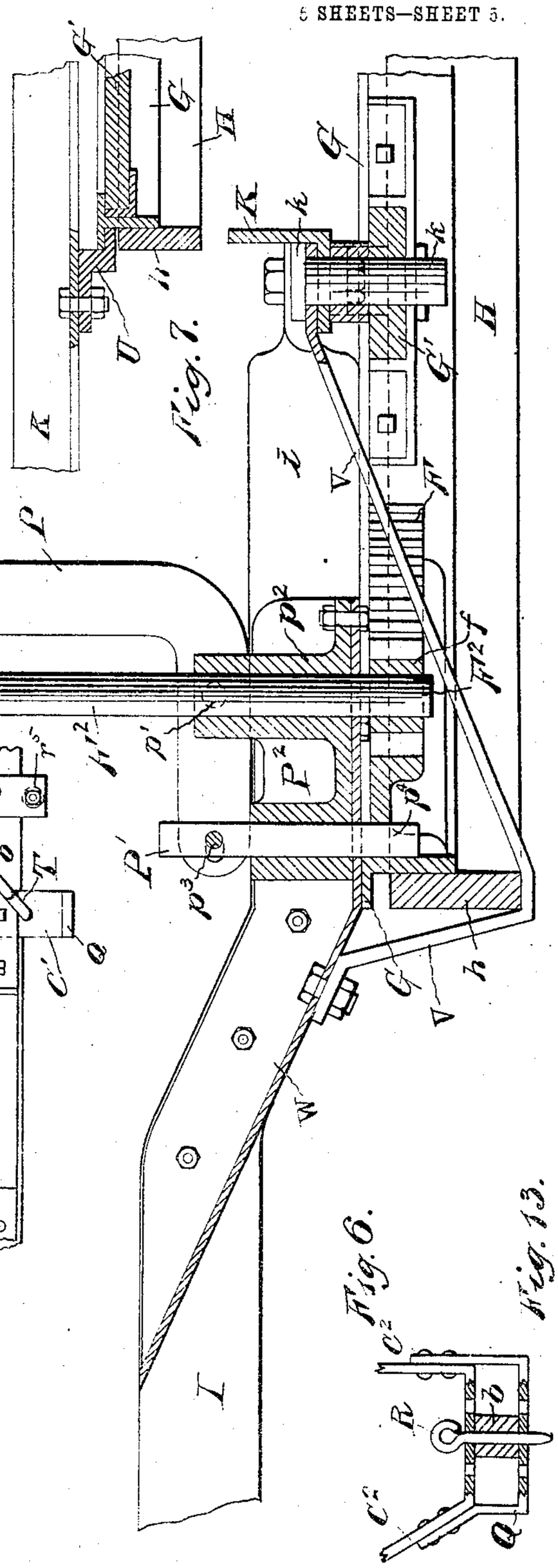

Fig. 7. Fig. 6.

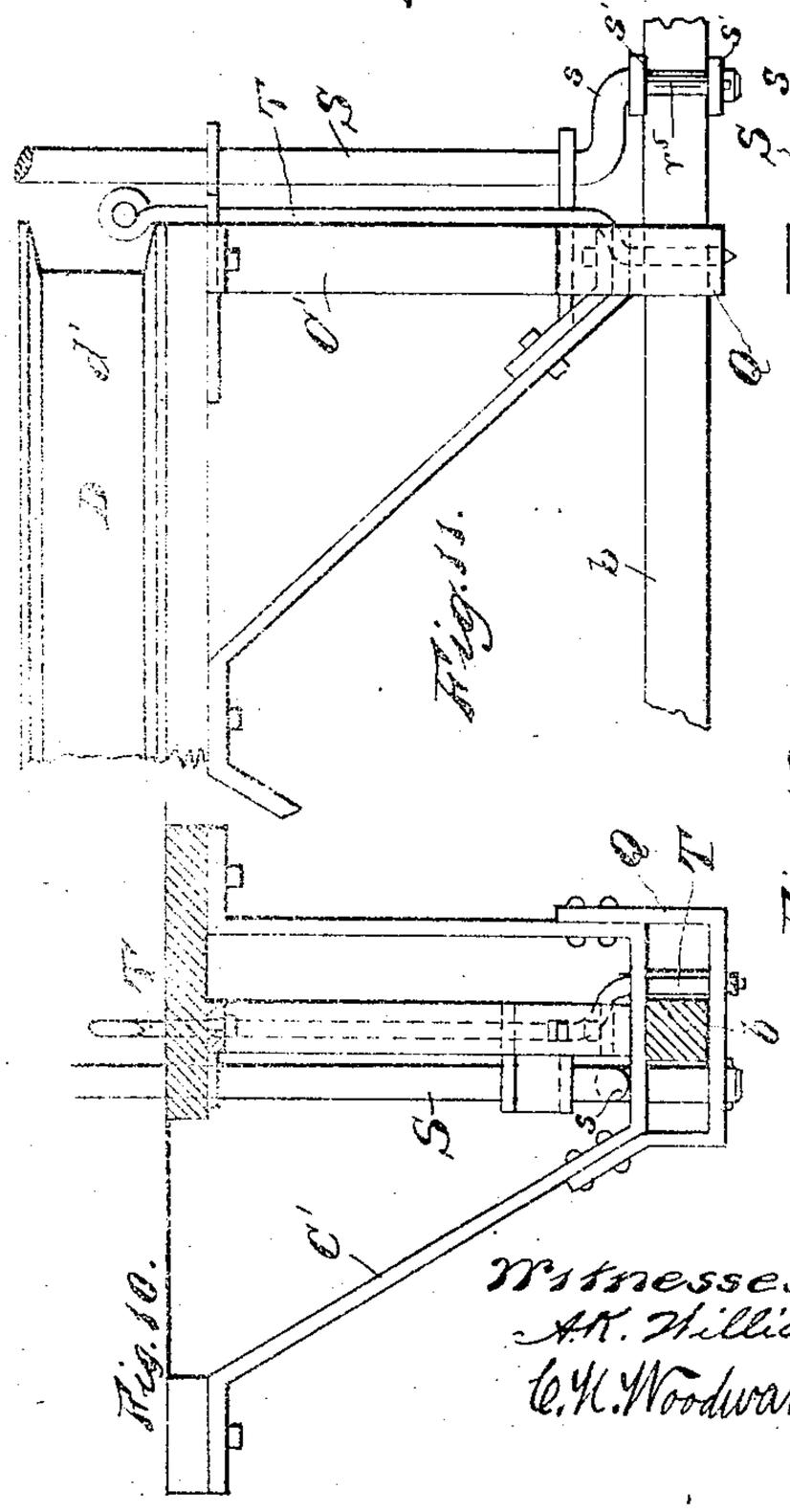

Fig. 11. Fig. 12. Fig. 10.

Fig. 13.

Witnesses:
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C. H. Woodward.

Inventor.
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No. 768,645. Patented August 30, 1904.

UNITED STATES PATENT OFFICE.

EDGAR A. WRIGHT, OF CANTON, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO AMERICAN ROAD MACHINE COMPANY, OF KENNETT SQUARE, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

ROAD-SCRAPER.

SPECIFICATION forming part of Letters Patent No. 768,645, dated August 30, 1904.

Application filed December 6, 1900. Renewed January 27, 1904. Serial No. 190,899. (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, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to improvements in earth-scraping machines for making roads and similar purposes of the class wherein the machine has a main frame, front and rear axles, draft devices, an elongated concavo-convex scraper-blade, which is vertically adjustable at either and both ends and is axially adjustable around a vertical axis, a scraper frame or carrier rigidly connected to the scraper, a drag-bar or draft-frame connected by universal joint to the main frame and at its rear connected to the scraper-frame, means for vertically adjusting the ends of the scraper, means for adjusting it around the aforesaid vertical axis, and means for adjusting and holding the rear axle at either of several inclinations to the vertical plane of the front axle.

For the purposes of understanding the present invention the earlier ones may be considered as of two classes, the first including those in which very long frames were employed formed of metallic bars which were curved or bent so as to give relatively lower parts at the ends and a relatively elevated central part above the scraper, the operator's platform being at the rear end and having adjacent to it a number of manually-operating devices supported on the main frame and intended for effecting the several adjustments of the scraper. The other class includes those each of which had a main frame with straight side bars and end bars, and it is to this latter class that the present mechanism belongs.

The object is to provide a machine capable of all of the uses to which the large and more complicated mechanisms are put and at the same time one whose cost of manufacture will be reduced to the minimum, which shall be as simple as possible in the arrangement of its parts, and which shall require but two horses in place of the four, six, and more animals that have heretofore been required.

Figure 1 is a plan view of a scraping mechanism embodying my improvements. Fig. 2 is a side elevation. Fig. 3 is rear end elevation. Fig. 4 is a section on the line *x x* of Fig. 1. Fig. 5 is a front elevation, some of the parts being shown in section. Fig. 6 is an enlarged vertical section showing some of the attachments to the scraper-carrier. Fig. 7 is a section of part of the scraper-carrier, taken on transverse lines. Fig. 8 is a perspective of the bracing-plate which supports the scraper adjusting and locking devices. Fig. 9 is a perspective of the boxing for the adjusting-shaft and the locking device. Figs. 10, 11, and 12 are respectively an inside view, a rear view, and a plan view of the devices for adjusting and locking one end of the rear axle. Fig. 13 shows the devices for adjusting and holding the other end of the axle. Fig. 14 is a view, partly in section, of the devices which connect the draft devices to the front end of the vehicle. Fig. 15 is a cross-section of the scraper-ring. Fig. 16 shows the front end of the drag-frame.

The machine is mounted and transported on the front wheels (indicated at A A′) and the rear wheels, (shown at B B′), each pair having its axle, as at *a b*. From the front axle there rises up a bracket-standard C, and at the rear axle are standards C′ C².

The main frame is indicated as a whole by D, it being formed by bending a channel-bar in such way as to provide the straight side bars *d d* and the straight end bars *d′ d²*, all these lying in substantially the same horizontal planes. By forming the main frame in this way I obviate the labor and expense incident to the machines having the frame formed in the way above referred to—that is, incident to bending it—so that it shall have two relatively lower end parts and a central higher arched part. The frame in the present case is supported above the axles by the aforesaid

bracket-standards on lines sufficiently high to permit the scraper to be arranged and adjusted in all necessary positions.

E indicates the draft devices as a whole, which may be of any preferred sort, they being connected to the front axle in such way that the latter can be turned with them for the guiding of the machine.

F indicates the scraper, which is or may be of the ordinary form. A frame for the immediate support of the scraper is provided by means of the ring G and the bifurcated bar H, having downwardly-curved end parts h' and a horizontally-curved part h, the latter being bolted to the ring G. The ring G has a cross-bar G', which is pivotally connected to the drag-bar or draft-frame. The latter is indicated as a whole by I. It has the two side bars i, which converge at their front ends and are bolted to the journal part J and at their rear ends are fastened to the cross-bar K. This bar is pivoted at k to the aforesaid bar G' of the scraper-frame. The journal part J of the guide-bar passes through the vertical plate L, secured to the main frame or to the bracket-frame of the front axle. It projects some distance to the front of the plate L and is provided with a spring j, which bears forward against a stop j'' on the pivot or journal J and bears backward against the frame. This spring acts in the direction of the line of draft on the scraper, and the latter is permitted to yield because of its presence. The journal or pivot J is mounted or held in the plate L with such looseness that the drag-bar and the scraper are practically universally jointed at that place. The bar K at the rear end of the drag-frame is extended laterally of the machine considerably beyond the scraper-frame. At each end it is connected to the means by which that end of the scraper is vertically adjusted.

M is a link connected with an eye at the end of the bar K and extending to points above the main frame. At its upper end it is loosely connected to a crank-arm N, that projects outwardly from a segment-plate N', pivotally supported at n in upright or standard bars at n^2.

O is a worm which engages with the teeth on the plate N', it being secured to the shaft o, which carries a hand-wheel O'.

There is one of these sets of parts at each side of the machine and both directly over the scraper-frame. The standards or frames at n^2, which support the hand-wheels, the gearing, and the upper ends of the link M, are secured stationarily to the main frame—that is, secured in such way that the hand-wheels are held in fixed longitudinal planes in relation to the main frame—the present construction in this respect materially differing from those in which the vertical adjusting devices for the scraper were secured to a rotary bar or platform. The scraper and its frame can be also adjusted axially around the vertical axis at the pivot k.

F' is a curved rack-segment fastened to the scraper-frame. f is a pinion meshing with this rack. It is at the lower end of a vertical shaft F^2. This shaft extends directly upward from the pinion to points considerably above the main frame and is provided with a hand-wheel f' at points where it is readily reached by the operator standing near the aforesaid hand-wheels O', no matter what position the shaft F^2 may be moved to by the scraper-frame below. Heretofore the adjusting devices for effecting this rotary or axial adjustment of the scraper-frame have at one point or another been connected to the main frame. I have greatly simplified the construction, dispensing with all of these frame attachments, boxes, hinges, or equivalent supports. I arrange the adjusting-shaft F^2, its hand-wheel, and pinion so that they are carried and supported entirely by the scraper-frame. The scraper and its frame are locked in whatever position they are adjusted to by devices supplemental to those aforesaid, which are also supported entirely upon and are carried by the scraper-frame.

P indicates a lever having a long arm p extending upward to points near the operator's platform, the operator being able instantly at any time to reach it or a pedal-piece at it upper end with his foot. This lever is pivoted at p' to a support p^2, secured to the drag-frame. P' is a lock-pin pivoted at p^3 to the short arm of the lever, and this pin is adapted to register with and enter one or another of a series of apertures or recesses p^4, formed in the ring of the scraper-frame. Whenever the frame is to be adjusted axially horizontally, the operator by his foot releases the lock-pin, and then by means of the hand-wheel f' and the shaft F^2 and the pinion f throws the scraper to the desired position, and then, upon withdrawing his foot, the lock-pin entering the registering aperture or recess p^4, holds the frame of the scraper in the adjusted position.

In order to hold the machine to the proper lines of travel in conformity with the angle to which the scraper-blade is adjusted, I support and adjust the rear axle b in the way shown. Each end of the axle is placed in a box elongated longitudinally of the machine, this being provided by securing to the aforesaid bracket-standards C' C^2 supplemental bracket-pieces Q, the lower parts of which are somewhat below the lower horizontal parts of the standards C' C^2. The wheel B' and its end of the axle can be held in the desired position by means of a pivot-pin R, which can be placed in either of three positions according as that end of the axle is to be central or to forward or the rear of its central position. The other end of the axle can be similarly adjusted to either of three positions in its box. This is accomplished by means of a rotary

vertical shaft S, mounted on the main frame and having at its lower end a crank *s*, the pin at the end of which passes through the plates or clips *s'*, secured to the axle. By "secured" I intend such a connection of the clips with the axle as shall enable the latter to be moved backward and forward by the movement of the wrist or crank *s* in its arc; but this connection does not prevent the clips having the necessary slight movement longitudinal of the axle to enable the crank to follow its arc. To this end the clips inclose the axle above and below, and the axle is engaged at its front side by the crank-wrist and at its rear side by a roller mounted on a bolt connecting the rear ends of the clips. This roller is shown in elevation at r^5, Fig. 11, and by dotted lines in plan view in Fig. 12. The use of this roller lessens resistance and facilitates the movement of the crank. The crank is so arranged that as it is thrown forward or backward it not only moves the axle to one or the other of its extreme positions, but locks it there. An additional holder is provided in the form of a vertically-sliding rod T, which can be drawn up and moved down by the operator. The hand-wheel S', by which this adjusting of the wheel B and its end of the axle is effected, is within convenient reach of the operator while standing on the platform. The adjusting of the axle in the way described is not only accomplished by exceedingly simple and cheaply-constructed parts, but allows for a wide range in the inclination of the rear axle. Under ordinary circumstances the only adjustment needed is attainable by means of the crank-shaft adapted to move the wheel B forward or back; but in extreme cases this inclination can be doubled by throwing the other end of the axle also in the required direction and fastening it by the pivot-pin. It is obvious that by removing the pin R the axle may be adjusted in the direction of its length and thereafter adjusted angularly by the wheel S', as already described.

The scraper-ring is held in proper position relative to the draft devices by means of clips U (see Figs. 4 and 7) and a bracket V. (See Figs. 2 and 6.) The clips U are secured to the cross-bar K and have their ends under the flanges of the ring G. The bracket V is at its rear end secured by the center hinge-pin *k* and at its front end is bolted to a bracket-plate W, the latter being rigidly secured to the side bars of the draft device *i*.

The holder for the adjusting-shaft F^2 and for the lock pin P' is indicated as a whole by P^2. (See Figs. 6 and 9.) It rests upon and is secured to the bracket-plate W, it being bolted to the base-plate *w'*.

The drag-frame and scraper are braced laterally and kept from undue swaying, although allowed to swing vertically, by means of a brace Y, hinged at its upper end to the main frame and at its lower end to the cross-bar K of the drag-frame.

What I claim is—

1. In a road-scraper, the combination of the main frame, the scraper-frame connected therewith, and means for adjusting the scraper, said frame being provided at its lowermost rear part with longitudinal guideways, the rear axle mounted in said guideways, and means for adjusting the axle forwardly and rearwardly in the same, comprising a longitudinally-adjustable pivot for one end of the axle; substantially as set forth.

2. In a road-scraper, the combination of the main frame, the scraper-frame connected therewith, means for adjusting the scraper-frame, longitudinal guideways carried by the main frame at its lower rear part, the rear axle situated in said guideways, means for adjusting one end of said axle and pivotally securing it in one of said guideways at different points longitudinally of the machine, and means for moving the other end of said axle forward and backward in the other guideway, substantially as set forth.

3. In a road-scraper, the combination of the main frame, the scraper-frame, means for adjusting the latter, standards secured to the main frame, having a horizontal portion at their lower ends, the rear axle situated beneath said horizontal portions, supplemental bracket-pieces secured in front and rear to said standards and passing horizontally below the axle to form guideways in which the axle is adjustable forward and backward, and means for adjusting the axle in said ways, substantially as set forth.

4. The combination of the main frame and the rear axle, the standards and supplemental bracket-pieces passing above and below the axle, and the pin R, said parts being perforated to receive the pin, and means for adjusting the axle while so pivoted; substantially as set forth.

5. The combination of the main frame, the scraper, the vertically and horizontally adjustable scraper-frame flexibly connected to the main frame, the relatively shorter front axle, the relatively longer rear axle, the longitudinally-elongated box for each end of the axle, the vertical crank-shaft having its crank connected with one end of the axle, and a vertical pivot connecting the other end of the axle with the main frame, substantially as set forth.

6. The combination of the main frame, the scraper, the vertically and horizontally adjustable scraper-frame flexibly connected to the main frame, the relatively shorter front axle, the relatively longer rear axle, the longitudinally-elongated box for each end of the axle, an adjustable vertical pivot connecting one end of the axle with its said box and power devices for adjusting by hand the other

end of the axle longitudinally of the main frame, substantially as set forth.

7. In a road-scraping mechanism of the class described, the combination of the main frame, the scraper-frame, the front axle, the rear axle pivotally connected to one side of the main frame and adjustable forward and backward at the other side of the frame and the vertical shaft S provided with a crank hinged to the axle, substantially as set forth.

8. In a road-scraping mechanism of the class described, the combination of the main frame, the scraper-frame, the front axle, the rear axle pivotally connected to one side of the main frame and adjustable forward and backward at the other side of the frame, the plates s' connected with the axle, the vertical shaft S extending above the main frame and having the crank s hinged to the plates s', substantially as set forth,

9. In a road-scraping mechanism of the class described, the combination of the main frame, the scraper-frame, the front axle, the rear axle pivotally connected to one side of the main frame and adjustable forward and backward at the other side of the frame, the locking-rod T adapted to hold the axle in either of several positions of adjustment, and the crank-shaft S mounted vertically at the side of the machine and having its crank connected with the axle, substantially as set forth.

10. In a road-scraping mechanism of the class described, the combination of the main frame, the scraper-frame, the front axle, the rear axle, means for pivotally connecting one end of the axle to the main frame at either of several positions of adjustment, means for supporting the other end of the axle adjustably at the other side of the main frame, and a crank-shaft mounted at the last said side of the main frame and having its crank connected with the axle, substantially as set forth.

11. The combination of the main frame, the adjustable scraper-frame, the drag-frame having the diverging bars i, the cross-plate W secured to said bars, a vertical pivotal connection for the scraper-frame, the cross L-bar K connecting the rear ends of the bars i with the vertical pivot of the scraper-frame, and means for adjusting and locking the scraper-frame supported on the cross-plate, substantially as set forth.

12. The combination of the main frame, the vertically and horizontally adjustable scraper-frame, the drag-frame having the diverging bars i, i, the cross-plate W interposed between and rigidly secured to said bars, the bearing bracket or standard P^2 secured to the cross-plate, the lock supported by the cross-plate W for fastening the scraper-frame after adjustment, the pinion supported by the cross-plate for adjusting the scraper-frame, the hand-wheel f' and the shaft F^2 extending continuously from the hand-wheel to the pinion and mounted in the standard P^2, substantially as set forth.

13. The combination of the main frame, the front axle, the rear axle, a draft plate or bar L secured to the main frame, the scraper, and the drag-frame for the scraper having a horizontally-arranged pivot-bar J extending loosely through the draft-bar L and the spring j interposed between the pivot-bar and the draft-bar, substantially as set forth.

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

EDGAR A. WRIGHT.

Witnesses:

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PRIMUS PHILIPPI.