(No Model.) 3 Sheets—Sheet 1.

F. T. LOMONT.

ROAD MAKING MACHINE.

No. 365,138. Patented June 21, 1887.

Fig. 1.

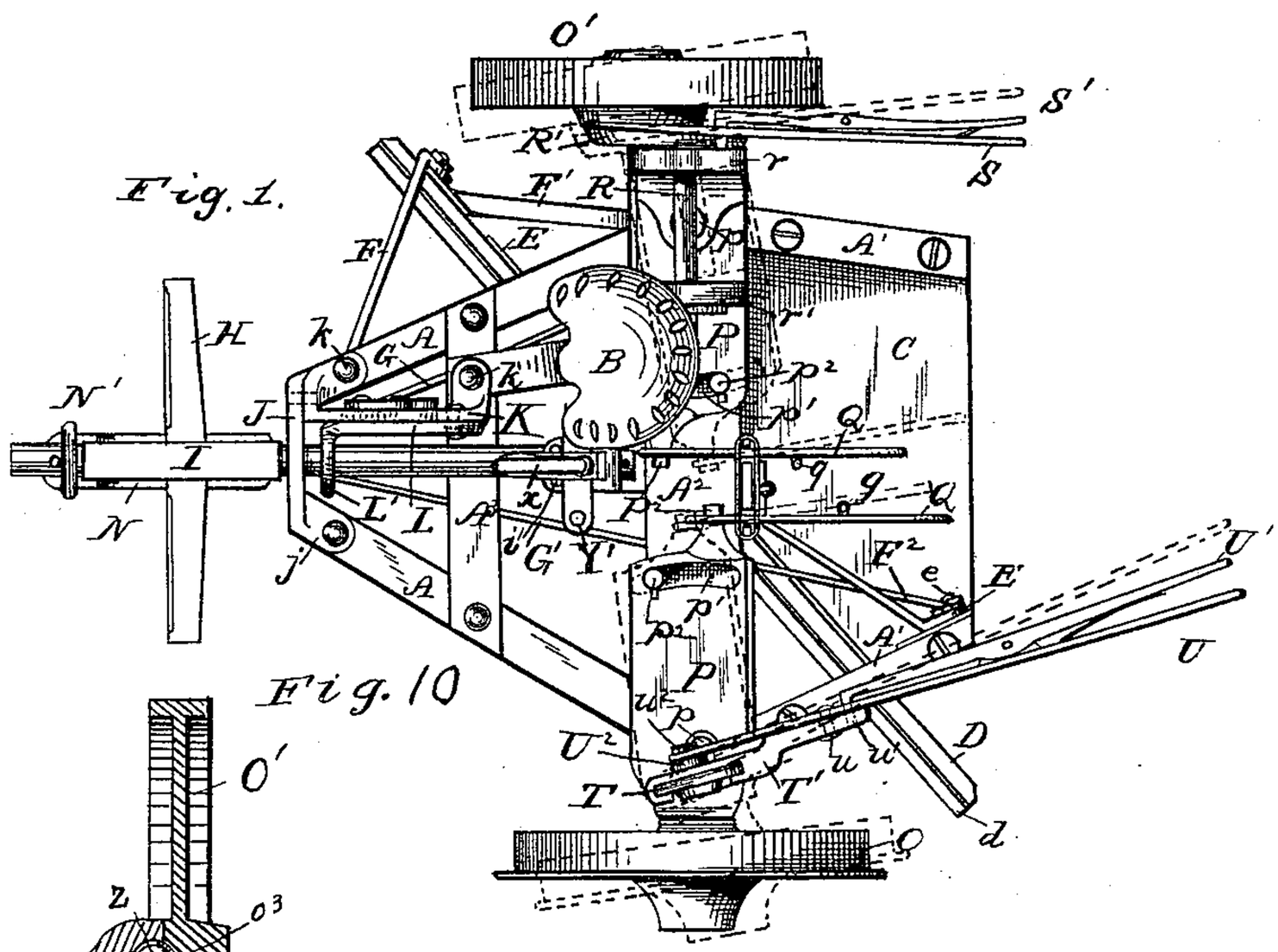


Fig. 10

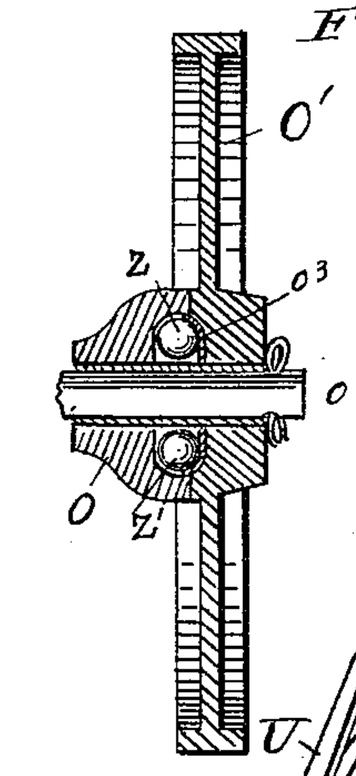
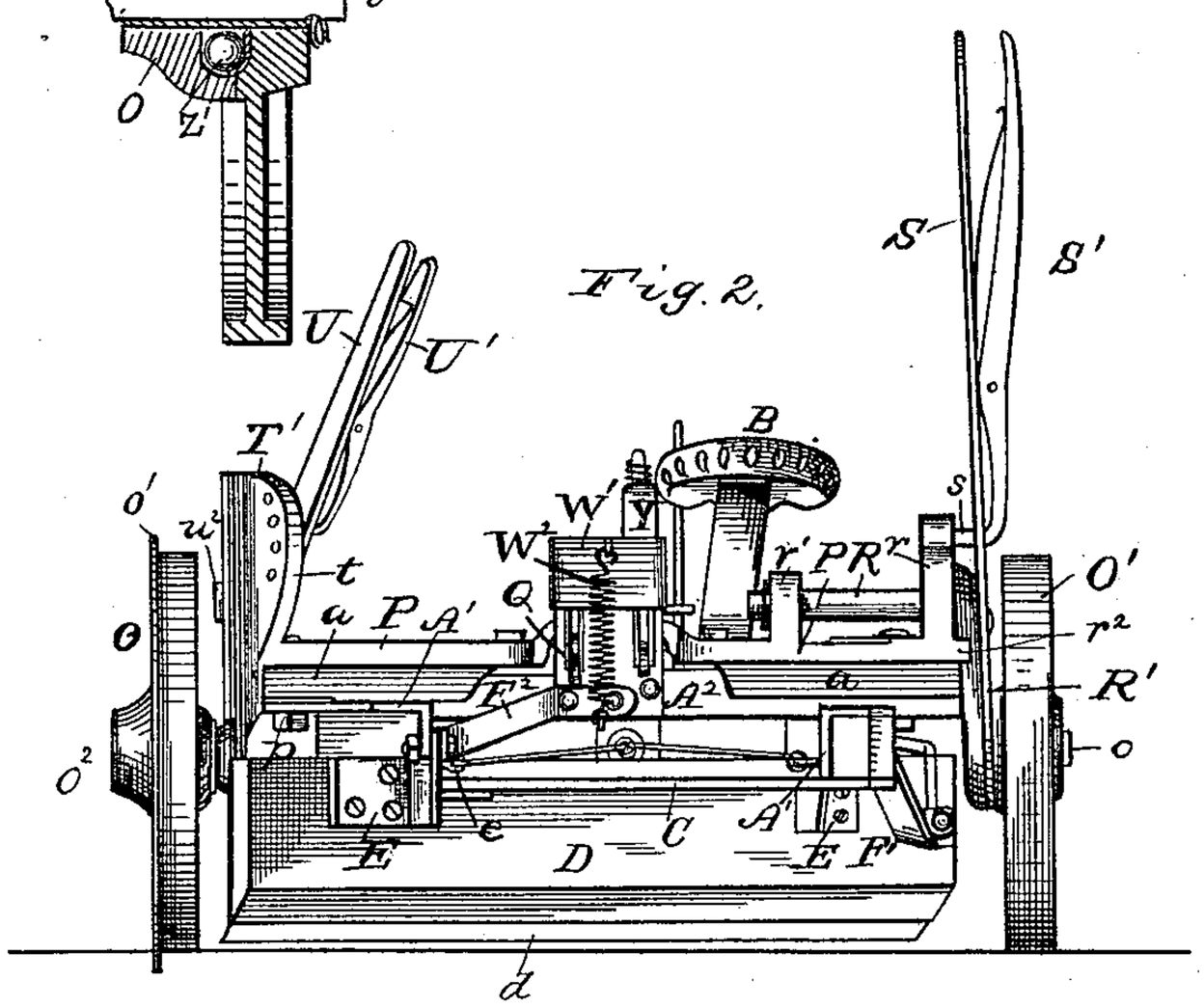


Fig. 2.



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(No Model.) 3 Sheets—Sheet 2.

F. T. LOMONT.

ROAD MAKING MACHINE.

No. 365,138. Patented June 21, 1887.

Fig. 3.

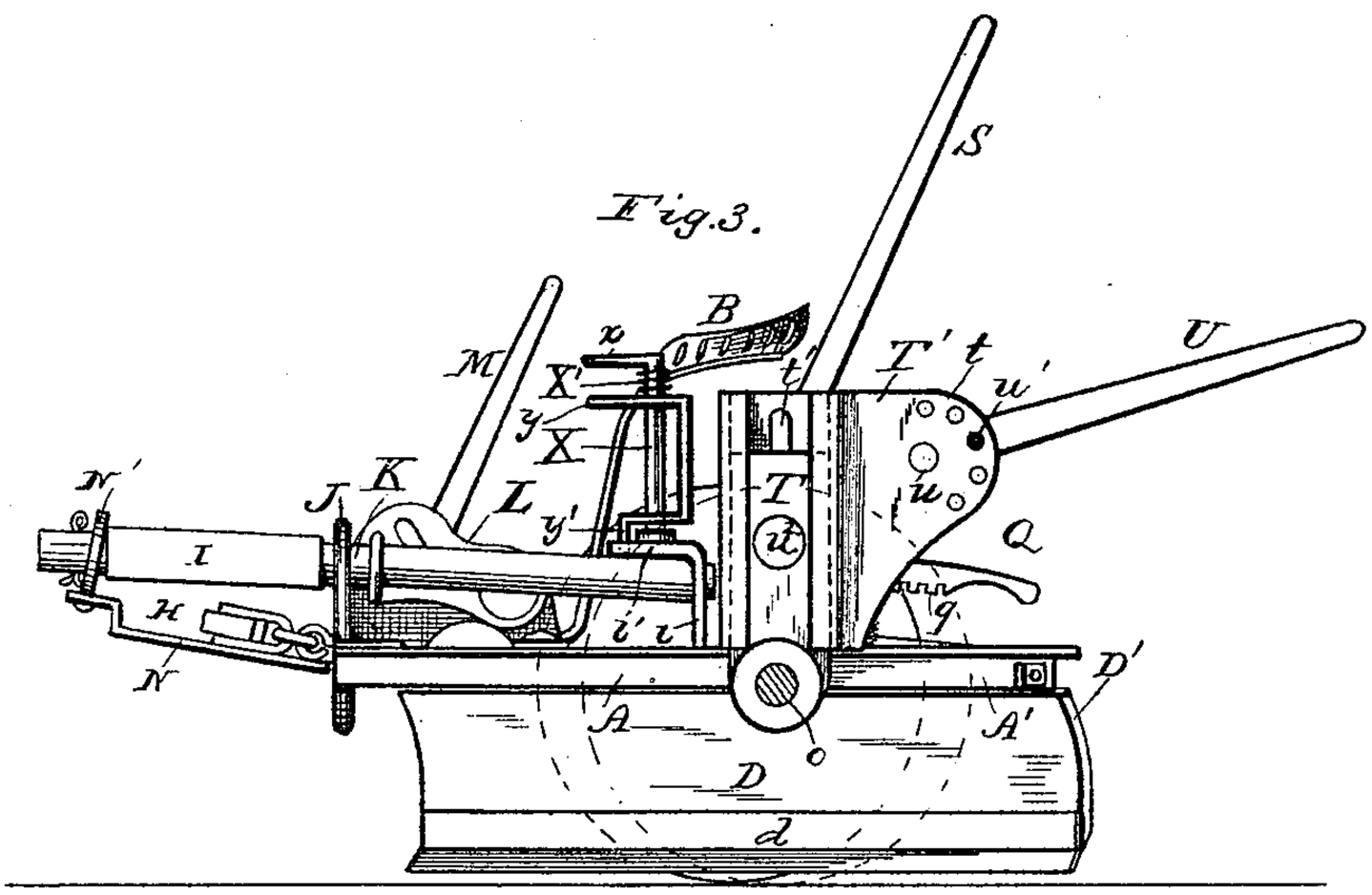
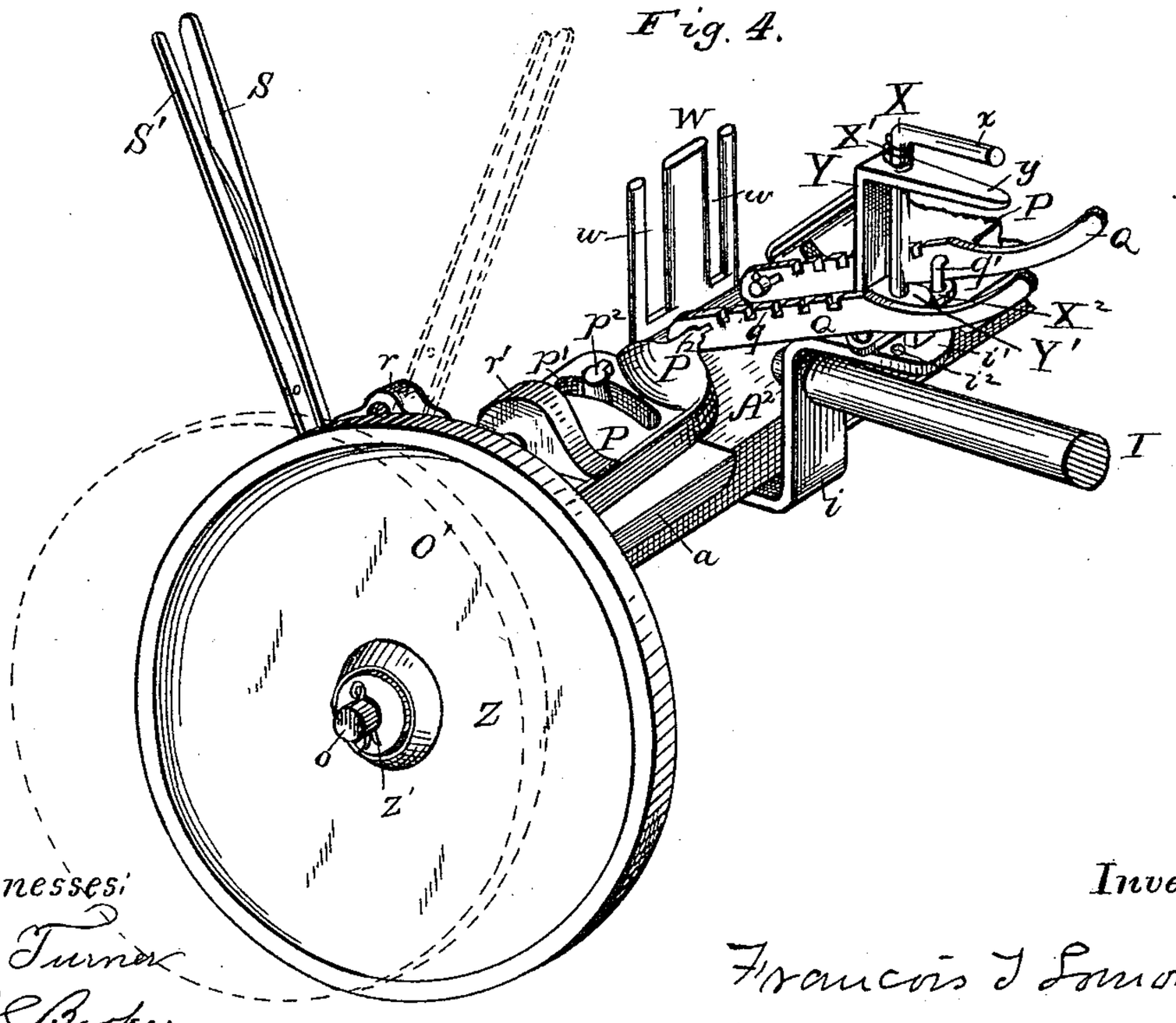


Fig. 4.



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(No Model.) 3 Sheets—Sheet 3

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ROAD MAKING MACHINE.

No. 365,138. Patented June 21, 1887.

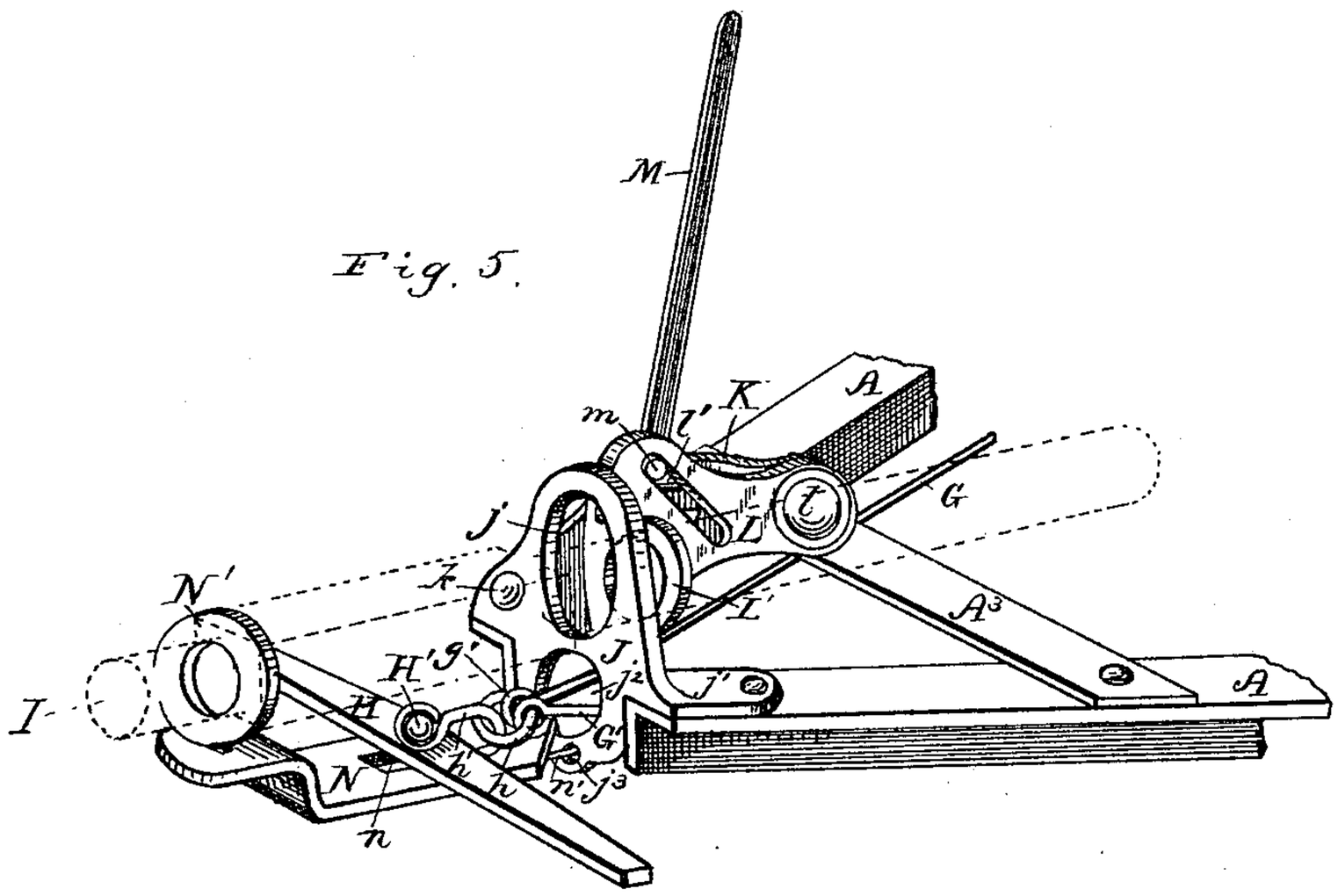

Fig. 5.

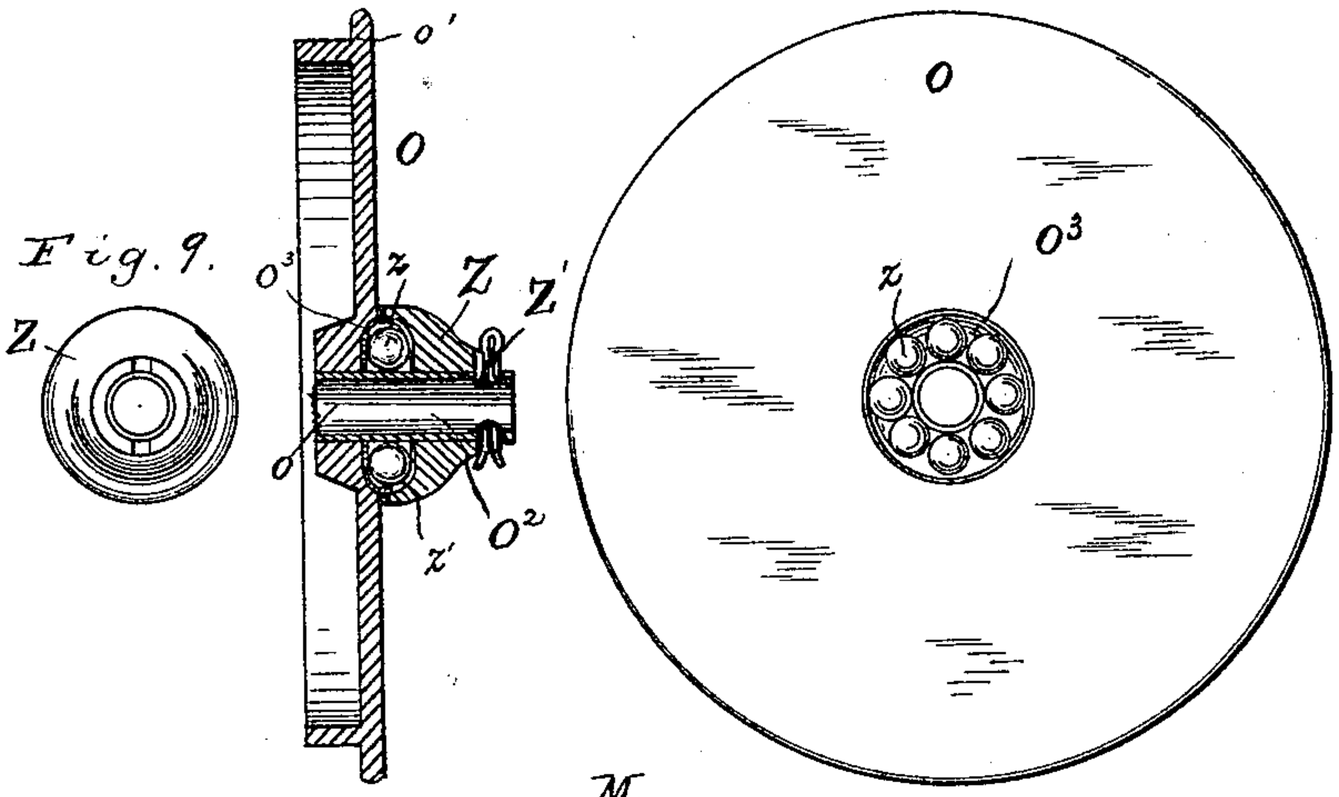

Fig. 9. Fig. 7. Fig. 8.

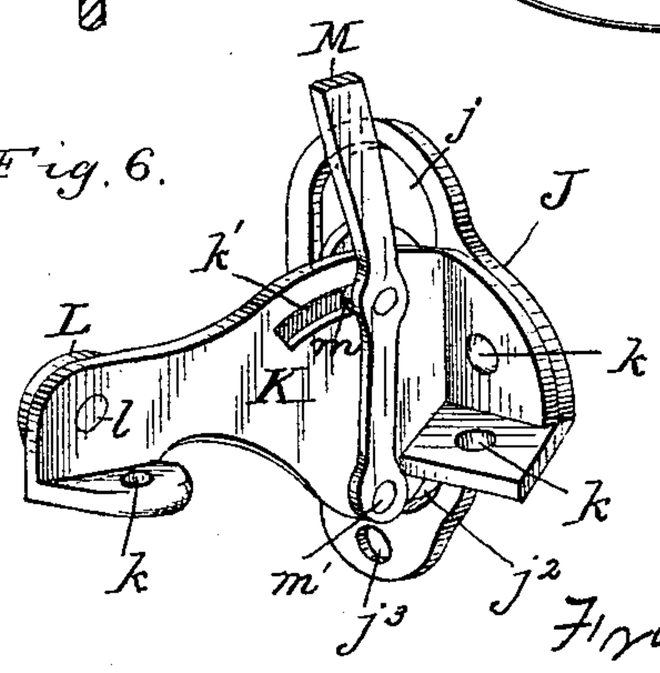

Fig. 6.

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by Dodge & Bliss Atty

UNITED STATES PATENT OFFICE.

FRANCOIS T. LOMONT, OF FORT WAYNE, INDIANA, ASSIGNOR OF ONE-HALF TO JOHN S. LARWILL, OF SAME PLACE.

ROAD-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 365,138, dated June 21, 1887.

Application filed January 20, 1886. Serial No. 189,210. (No model.)

To all whom it may concern:

Be it known that I, FRANCOIS T. LOMONT, a citizen of the United States, residing at Fort Wayne, in the county of Allen and State of Indiana, have invented certain new and useful Improvements in Road-Making Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

Figure 1 is a top plan view of a road-making machine embodying my invention. Fig. 2 is a rear elevation of the same. Fig. 3 is a side view, one of the carrying-wheels being removed. Fig. 4 is a view in perspective showing the devices whereby the inclination of the wheels relatively to the line of draft may be varied. Fig. 5 is a perspective view showing the devices by which the forward end of the tongue is adjusted, and showing also adjacent devices. Fig. 6 is a perspective of the tongue-adjusting devices from another point of view. Fig. 7 is a vertical section of one of the carrying-wheels, together with an anti-friction bearing therefor. Fig. 8 is a face view of the wheel shown in Fig. 7, the nut or cap which confines the anti friction balls, and also retains the wheel upon the spindle, being removed. Fig. 9 is an outside face view of this cap or nut. Fig. 10 is a vertical section of the other carrying-wheel.

In the drawings, A A′ A A′ represent the longitudinal sills or bars of the machine, the parts A A of these bars converging toward the front of the machine, while the parts A′ A′ converge rearward. These bars or sills A A′ are preferably formed of angle-iron or steel, which shape I have found the best adapted for connecting the various parts of the machine, while at the same time having the necessary strength.

A^2 is a cross-beam connecting the two longitudinal sills at the points where they are most widely separated, this beam supporting the heaviest operative parts of the machine, and therefore being comparatively large and strong.

A^3 is a cross-piece connecting the parts A of the longitudinal sills in front of the beam A^2, and upon which is supported the seat B.

C is a platform supported in rear of the cross-beam A^2, between the parts A′ A′ of the longitudinal sills. Upon this platform the operator may ride, the levers which move the various parts of the machine being within convenient reach of the person upon the platform, as well as within reach of the driver when in the seat B.

D represents the scraper-blade mounted beneath the frame, and in a diagonal line relative thereto. This scraper-blade is preferably made of cast-iron, the lower cutting-edge, *d*, being of steel. The upper edge of the rear portion of the blade is curved slightly forward, as at D′, in order to cause the earth to roll downward as it nears the rear end of the scraper. The scraper-blade is attached to the frame of the machine by means of brackets E, angular in form, one wing of each bracket being bolted to the scraper-blade and the other to the vertical web of the angular bar A A′. There are two of these brackets E, one connecting the forward portion of the scraper with the part A of one of the longitudinal sills and the other connecting the rear portion of the scraper-blade with the portion A′ of the other longitudinal sill.

In order to further strengthen and brace the scraper-blade, I employ brace rods or bars F F′ F^2, the two former being connected with the forward end of the scraper and the latter strengthening its rear end.

Power is applied to the scraper and frame through draft-rods G G′, connected at their forward ends to the whiffletree H, and at their rear ends at suitable points to the machine. I have found that the most desirable points at which to apply the power are at or near the connections between the scraper-blade and the supporting-frame; and in order to make such an attachment I provide the brackets E E with hooks *c c*, over which pass eyes formed on the rear ends of the draft-bars. It will be understood that when thus arranged the draft-bars are of unequal lengths, the one, G, which is connected with the forward bracket, E, being shorter than the one, G′, which extends rearward over a portion of the platform C and engages with the hook on the rear bracket.

It is often desirable to vertically adjust the tongue or pole in order to accommodate horses of various heights.

I am aware that the poles of harvesting-

machines have been made adjustable relative to the main frame of the machine, and that a scraper has been made with a pivoted tongue and a lever adapted to depress the front end of the scraper; but I am not aware of any road-making machine which has a main frame with a pivoted vertical swinging tongue, locking device adapted to lock the tongue in any position to which it may be adjusted, and a scraper hung to the main frame in such manner that the position of the front end of the scraper relative to the ground over which it is propelled may be determined by means of such adjustment of the tongue. It is also found to be much easier upon the team if the whiffletree or evener is so attached that one side or the other of the machine may be elevated or depressed without causing a corresponding movement of the whiffletrees. Both of these ends I have accomplished, as well as certain others, and I will now describe the devices whereby these ends are attained.

I represents the tongue of the machine pivotally mounted at its rear end in a circular aperture formed in a bracket-plate, *i*, carried by the beam A^2. This connection between the tongue and frame is such that the forward end of the tongue may be elevated or depressed independently of the frame, and by reason of the aperture in the plate *i* being round the frame is permitted to tip from one side to the other without there being any tendency to correspondingly turn the tongue. The tongue is held against longitudinal movement in said aperture by any suitable devices which will give the necessary flexibility, a shoulder on the tongue and a pin being shown for this purpose. The tongue projects forward from the plate *i* and passes loosely through a vertically-elongated slot, *j*, in a casting or head-piece, J, which unites the forward ends of the sill-pieces A A. This head-piece is provided with feet *j'*, whereby it is secured to the horizontal webs of the sill-pieces A, and has two apertures, j^2 j^3, through it below the slot *j*, for a purpose to be described.

K is a bracket plate or standard bolted or riveted to the frame of the machine, as at *k k*. To this bracket is pivoted at *l* a plate, L, carrying at its forward end a circular eye, L', through which passes the tongue, which is at this point round in section to fit the eye L', and to permit the tongue to turn freely therein.

M is a hand-lever pivoted at *m'* to the bracket K, and provided with a stud or pin, *m*, which projects through a slot, *k'*, in the bracket concentric with the pivot *m'*, and engages with the pivoted plate L, which is slotted at *l'* for that purpose.

It will be seen that as the lever M is moved backward—that is, toward the driver's seat—the pin *m*, engaging with the plate L, will elevate it from the position shown in Fig. 5 to that shown in Fig. 3, the plate L carrying therewith the forward end of the tongue, while in the meantime the pin *m* moves from a position in the upper portion of the slot *l'* to one on the lower part thereof. This mechanism permits a ready and easy vertical adjustment of the forward end of the tongue, which is at the same time perfectly free to turn relatively to the frame. Any suitable locking device may be used in connection with this lever M to hold it in place after the tongue has been properly adjusted.

The forward ends of the draft-rods G G' pass through an aperture, j^2, in the head-piece J, and are formed with eyes *g'*, which engage with and are connected by a link or ring, *h*, which in turn is connected with the evener or whiffletree by a clevis, *h'*. These draft devices rest upon a plate, N, which is loosely supported at its forward end from the tongue by means of a loop or eye, N', and at its rear end by a rearwardly-projecting pin, *n'*, which engages with an aperture, j^3, provided therefor in the head-piece J. It will be seen that the plate when thus supported is caused to move both vertically and horizontally with the tongue and frame, but that it, and consequently the evener which it supports, may have a horizontal turning movement independent thereof, so as to accommodate the draft devices to the position of the team.

The evener is connected with and held in position upon plate N by means of a bolt or screw-rod and nut, H', passing through the clevis, evener, and plate. Plate N is slotted, as at *n*, through which slot passes the bolt H', in order that the evener may be adjusted to accommodate the position of the ends of the draft-bars G G'.

The carrying-wheels O O' of the machine are supported upon stub-axles *o o*, which are carried by horizontally-swinging plates P, preferably of cast metal, which are pivoted at *p p* to the cross-beam A^2. In order to steady the movements of these plates, I slot them near their inner ends, these slots being in the arcs of circles struck from the pivotal points *p*, and through these slots project upwardly studs p^2, having key-shaped heads. These slots and pins or studs not only tend to guide and steady the movements of the plates P, but also limit their movements and prevent the wheels from being turned too far in either direction.

It will be noticed that the stud p^2 on the right-hand side of the machine is situated near the rear edge of beam A^2, while the stud on the left-hand side is located near the front edge thereof, this arrangement being desirable, as the inner ends of the plates P must be moved in opposite directions in order to give the wheels the same inclination. As it is only desirable to incline the wheels relatively to the line of draft, in order to counteract the side-thrust upon the frame caused by the inclined position of the scraper-blade, it is necessary to turn the wheels in but one direction, and I have therefore so formed the slots *p'* that when the wheels are arranged parallel with the line of draft each stud p^2 shall lie at one end of the slot in which it is situated.

a a are metallic plates interposed between

the plates P and the cross-beam A^2, in order to take the wear caused by the moving of the plates.

Q Q are bars or links pivoted to the inner projecting ends P^2 of the plates P, and by which the plates are rocked upon their pivots. When it is desired that an operator riding upon the platform C shall operate these bars to turn the wheels, they are placed in the position indicated in Figs. 1, 2, and 3. When in this position, the bars Q lie in slots *w w*, formed in a guide-plate, W, attached to the rear face of beam A^2, their rear ends projecting over the platform C. One face of each bar Q—the under one when it is arranged in the position shown in Fig. 1—is notched or toothed, in order that the levers may be locked in any desired position after the wheels have been adjusted, by reason of the engagement of such notched portions of the bars with the plate W.

In order to hold the notched portions of the bars in constant engagement with the plate, I make use of a sliding cap-piece, W′, which fits over the upper end of the plate W and bears downward against the upper faces of the bars Q, it being held in engagement therewith by a spring, W^2, interposed between the cap and some stationary part of the machine.

In Fig. 4 I have shown the position of parts occupied when it is desired that a person occupying the driver's seat should be able to regulate the horizontal position of the wheels.

In order to make the necessary change in the position of the parts from that shown in Figs. 1, 2, and 3 to that shown in Fig. 4, the cap-piece W′ is first removed, after which the bars Q are turned upon their pivots p^2 until they project forward, in which position the notched portion *q* is on top. *q′ q′* are pins projecting from the bars Q in a direction opposite to the notched portion *q*. When the parts are in the position shown in Fig. 4, these pins *q′* are adapted to engage with apertures formed in the cross-head X^2 of a rock-shaft, X, the handle *x* of which is within convenient reach of the driver. By moving the end of the handle toward the driver's seat the wheels and their carrying-plates P will be turned into the position indicated by dotted lines, Fig. 1, the same as when the bars Q are operated from the platform of the machine. The rock-shaft X is mounted in a forwardly-projecting plate, *i′*, of the bracket *i*, in which the rear end of the tongue is mounted.

Y is a latch-bar mounted upon rock-shaft X, and having a handle, *y*, parallel with the handle of the rock-shaft, and having also a forwardly-projecting plate, Y′, carrying a pin adapted to engage with apertures i^2 in the plate *i′*, a spring, X′, being employed to insure a proper engagement of said pin with the apertures. When the inclination of the wheels is desired to be changed, the operator grasps the two handles *x* and *y* and raises the latch-bar, compressing spring X′. The rock-bar X is then free to be turned in whichever direction it is desired, after which the latch-bar is released, and engaging with one of the apertures i^2 locks the parts in the adjusted position.

I will now describe the devices whereby an independent vertical adjustment of each end of the machine may be effected.

I will first describe the mechanism by which the right-hand side of the machine and the forward end of the scraper are vertically adjusted, reference being had particularly to Figs. 1, 2, and 4.

R is a rock-shaft mounted in lugs or standards *r r′*, rising from the plate P and carrying at its outer end a crank portion, R′, from which projects the stud-axle *o*, on which the wheel is supported.

S is a lever bolted or otherwise rigidly secured to the crank-arm or hanger R′ of the rock-shaft, the lower end of this hand-lever preferably surrounding or engaging with the stud-axle *o*.

S′ is a spring-latch, the lower projecting end, *s*, of which engages with a series of apertures formed in the upper portion of the standard *r*, in which is also pivoted the rock-bar R.

r^2 is a stop carried by the rocking plate P, with which the crank or hanger portion R′ of the rock-shaft engages when it and the lever S are in a substantially vertical position and the frame consequently elevated to the highest point. By releasing the latch S′ and moving the lever S backward from this position the shaft R is rocked, and the portion R′, carrying the axle of the wheel, is moved forward and upward, thereby depressing the right-hand side of the machine and causing the forward end of the scraper to approach nearer to or to dig more deeply into the soil.

It will be seen that when the wheel O′ is elevated its axis *o* lies in front of as well as below the pivotal line R of its connection with the main frame.

As it often requires a great amount of power to elevate the forward end of the scraper-blade when the machine is moving and the blade in contact with the soil, I have devised this peculiar connection between the carrying-wheel and the main frame, whereby the draft of the team is employed to assist in elevating this portion of the machine and the scraper-blade. Whenever the wheel is in a more or less elevated position, and the latch S′ is released from engagement with the standard *r*, there will be a tendency on the part of the wheel, if the machine be in motion, to move backward relatively to the frame, in order that its axis may be in rear of the axial line of its connection with the main frame, and this tendency will materially assist the operator in rocking the wheel and its supporting-bracket into the position shown in Fig. 2, where the stop r^2 will prevent further movement. I am aware that similar devices have been used in sulky-plows, whereby the pull of the team is made available for lifting the frame to which the plow is attached; but my combination differs from such earlier ones, in that, among other things, in such earlier constructions the plows and their frames are

wholly in the rear of the crank-axles and the frames are tilted about the crank-axles, whereas in my machine the scraper projects in front of the driving-wheels, which latter are so arranged and operated that when one of the wheel-axles and its connections is thus operated it lifts the front end of the scraper, and when the opposite wheel-axle and its connections is similarly operated it lifts the rear end of the scraper, the sides of the machine being capable of being thus lifted independently of each other.

As much less power is required to elevate the rear portion of the scraper-blade, I prefer to employ for this purpose a mechanism different from that last above described, although such mechanism may be used.

Referring to Figs. 1, 2, and 3, T represents a sliding hanger, which carries near its lower end the axle *o*, on which the wheel is mounted, and which moves in vertical guides formed in a standard, T′, carried by the plate P. U is a lever pivoted at *u* to an extension, *t*, of the bracket T′, and connected by means of a link, U^2, with the sliding hanger T, the rear face of the bracket being slotted, as at *t′*, to permit the vertical movement of the bolt or pin u^2, which unites the link with the hanger T. U′ is a spring-latch, the projecting end *u′* of which engages with a series of apertures provided therefor in the part *t* of the bracket, whereby the wheel may be locked in any position to which it may be adjusted.

It will be readily seen without further description that when the rear end of lever U is moved backward and downward the wheel will be elevated, and that a reverse movement will depress the wheel and consequently elevate the frame.

On account of the diagonal arrangement of scraper-blade there is a considerable side-thrust upon the machine, and to prevent this from moving the machine sidewise I provide one or both of the wheels with a flange, *o′*. On level roads and in light work it is found that such flange or flanges are sufficient to properly hold the machine against sidewise deflection; but when heavy work is being done it becomes necessary to horizontally shift the plates P and incline the wheels in the manner heretofore described.

I am aware that road-engines have been used in which the wheels were mounted upon axles connected with the main frame by vertical pivots, whereby the vertical planes of such wheels relative to the sides of the frame could be changed for the purpose of steering the engine. So, also, it is old to use a similar construction in a horse hay-rake in which the rake slides on the ground some distance in front of the horses and wheels, which latter are pivoted to a frame on which the driver rides. In such machine the rake is pushed forward by means of a bar connected to the rake-head, running thence rearward between the horses, and pivoted to the wheel-frame. In the rake the object in shifting the wheels about their pivots is to steer the rake; but the rake cannot affect the direction of travel of the wheels, whereas in my machine the sidewise thrust produced by the engagement of the diagonally-arranged scraper with the earth to be moved tends constantly to force the wheels and main frame from the path over which they would move were it not for the combination therewith of said scraper; hence the function and mode of operation attained by the co-operation of these parts in my machine differ radically from that of the combination of the adjustable wheels with the frame of such earlier machines. This side-thrust upon the machine causes a great amount of friction upon the inside of the hub of wheel O′ and the outside of the hub of wheel O. To relieve this friction I provide anti-friction bearings at these points.

Referring to Figs. 7, 8, and 9, a better understanding of my invention will be had, these views showing the anti-friction devices applied to wheel O. O^2 represents the box which surrounds the spindle *o*, it preferably projecting somewhat beyond the outer face of the wheel. O^3 is a groove in the outer face of the wheel concentric with the box O^2. This groove forms a portion of the seat for a series of anti-friction balls, *z*, which are confined in place by a cap or nut, Z, in which is also formed a groove, *z′*, which completes the seat for the anti-friction balls. The nut or cap Z may be confined in place upon the spindle by screw-thread or otherwise, although I prefer to use a split key, Z′, for that purpose.

It will be seen without further description that the sidewise thrust of the wheel O is received by the balls *z*, and that therefore a rolling bearing is obtained instead of a sliding or rubbing bearing, as has heretofore been customary. The other wheel, O′, is provided upon its inner face with an anti-friction bearing of similar nature to that just described, the changes in its construction necessitated by its position being such as will readily suggest themselves to one skilled in the art. I do not wish, however, to be limited to the use of anti-friction bearings upon both wheels, as I consider it equally within my invention should but one wheel be provided with such a bearing, although it is much preferable to provide both wheels therewith.

It will be seen that the two wheel-supporting frames are independently adjustable, whether the reversible links Q be in the position shown in Figs. 1, 2, and 3 or in the position shown in Fig. 4. This permits me to vary the inclination of one wheel while permitting the other to run in line with the draft, which will ofttimes be found sufficient to counteract the tendency toward sidewise movement of the frame. It will of course be understood that when it is desired that but one of the wheels should be adjusted from the driver's seat, in such an event only one of the links or bars Q will be turned forward into the position shown in Fig. 4, the other one remaining in the slot in holder W.

What I claim is—

1. In a road-making machine, the combination of the supporting-frame, the scraper-blade, the platform, the tongue, the slotted head-piece, and adjusting and locking devices connecting the tongue with the frame, whereby the angle of the tongue relative to the scraper-blade may be adjusted, substantially as set forth.

2. In a scraper, the herein-described frame, consisting of the longitudinal sills formed of angle-iron and converging toward their forward ends, and the cross-beam A^2, in combination with the diagonally-arranged scraper-blades, and the angular brackets E E, bolted to the vertical webs of the longitudinal sills, and also to the scraper-blade, substantially as set forth.

3. In a road-making machine, the combination of the supporting-frame, the scraper, the two plates P P, pivoted to the frame, and having their inner ends in close proximity to each other, and the bars Q Q, by which said plates are moved, connected with the inner ends of said plates, and the wheels carried by said plates, whereby the angle of the planes of the wheels relative to the scraper may be changed, substantially as and for the purpose set forth.

4. In a road-making machine, the combination of the supporting-frame, a tongue, the draft-rods, the evener to which the draft-rods are connected, and a plate which supports the evener, loosely supported at its forward end from the tongue and at its rear end by the supporting-frame, whereby it and the evener may turn relatively to and independently of both the supporting-frame and the tongue, substantially as set forth.

5. In a road-making machine, the combination of the supporting-frame, a vertically-adjustable tongue pivoted at its rear end to the frame, the draft-rods, the evener to which the draft-rods are connected, a plate which supports the evener, supported at its forward end from the tongue and loosely connected at its rear end with the main frame, whereby when the forward end of the tongue is vertically adjusted the plate may move therewith, substantially as set forth.

6. In a road-making machine, the combination of the longitudinal sills, the head-piece J, connecting the forward ends of the said sills and provided with slot *j* and aperture j^2, a vertically-adjustable tongue passing through said slot *j*, draft-rods which pass through said aperture j^2, and an evener connecting the forward ends of said draft-rods, substantially as set forth.

7. In a road-making machine, the combination of a supporting-frame, a tongue pivoted thereto, plate L, pivoted to the frame, and having an eye, L′, through which passes the tongue, and means for moving said plate, whereby the tongue is vertically adjusted, substantially as set forth.

8. In a road-making-machine, the combination of the supporting-frame, a tongue pivoted thereto, plate L, pivoted to the frame, and having the eye L′, through which the tongue passes, and slotted, as at *l′*, and lever M, pivoted to the frame and provided with a pin, *m*, which enters said slot *l′*, and is adapted to move the plate L when the lever is rocked, substantially as set forth.

9. In a road-making machine, the combination of the supporting-frame, plates P P, pivoted thereon, standards rising from said plates, vertically-adjustable hangers mounted in said standards and carrying the spindles *o*, on which are mounted the carrying-wheels, and devices, substantially such as described, for vertically adjusting said hangers, substantially as set forth.

10. In a road-making machine, the combination of the supporting-frame, the diagonally-arranged scraper, a carrying-wheel, an axle upon which the wheel is mounted, supported by a hanger pivoted to the frame on a horizontal line, the pivotal line of the hanger being in rear of and above the wheel-axle when the latter is raised, whereby when the machine is in motion the draft of the frame tends to move backward the wheel and its axle, and hence assists in elevating the frame, and a stop which prevents the too far backward movement of the hanger, substantially as set forth.

11. In a road-making machine, the combination of the supporting-frame, the diagonally-arranged scraper, a hanger supported by the frame on a horizontal axis, R, and carrying an axle upon which a carrying-wheel is mounted, whereby as the standard is rocked the wheel is raised or lowered relatively to the frame, the wheel-axle (when the wheel is raised and the frame consequently lowered) being in front of and below the horizontal axis of the standard, and a stop carried by the supporting-frame adapted to arrest the movement of the standard when the frame has been elevated to the highest point, substantially as set forth.

12. In a road-making machine, the combination of the supporting-frame, the diagonally-arranged scraper, a hanger pivoted to the frame on a horizontal line, an axle and wheel carried by said hanger, a lever by which said hanger is turned on its horizontal pivot, and a lock for retaining said lever in position, the axial line of the wheel being below and in front of the horizontal pivotal line of the hanger, substantially as set forth.

13. In a road-making machine, the combination of the supporting-frame, the diagonally-arranged scraper, standards *r r′*, rising from said frame, a rock-shaft, R, mounted in said standards, a downwardly-projecting hanger, R′, carried by said shaft, an axle and wheel carried by the hanger, a lever, S, whereby the shaft is rocked, and a lock, S′, for said lever, substantially as set forth.

14. In a road-making machine, the combination of the supporting-frame carrying a driver's seat, carrying-wheels adapted to have their angle of inclination relatively to the frame changed, and reversible bars by which the wheels are turned, adapted to be operated either

by a person in the driver's seat or from in rear of the machine, substantially as set forth.

15. In a road-making machine, the combination of a supporting-frame carrying a driver's seat, wheel-carrying supports pivoted upon the frame by substantially vertical pivots, whereby the angle of the wheels may be varied, and reversible bars or links attached to the inner ends of said wheel-carrying supports and adapted to be operated either from the driver's seat or from in rear of the machine, substantially as set forth.

16. In a road-making machine, the combination of a supporting-frame, plates P P, pivoted on the frame and slotted, as at p', pins projecting through said slots to limit the movements of the plates, wheels carried by said plates, and arms by which the plates are moved, substantially as set forth.

17. In a road-making machine, the combination of a supporting-frame, the diagonally-arranged scraper, adjustable wheel-carrying supports pivoted to the frame by substantially vertical pivots, whereby the angles of the wheels can be varied, bars attached to said wheel-carrying supports for adjusting their positions to vary the angles of the wheels, and a lock for holding said bars in place after adjustment, substantially as set forth.

18. In a road-making machine, the combination of a supporting-frame, two independently-adjustable wheel-carrying supports pivoted to the frame on substantially vertical pivots, whereby the angles of the wheels may be varied, and means for independently adjusting and locking said supports after adjustment, substantially as set forth.

19. In a road-making machine, the combination of the supporting-frame, plates P P, pivoted upon the frame and carrying the wheels, and bars Q Q, pivoted to the inner ends of said plates and adapted to be turned upon their pivots to project either rearward or forward, whereby they may be operated and the angles of the wheels changed either by a person in the driver's seat or from the rear of the machine, substantially as set forth.

20. In a road-making machine, the combination of a supporting-frame, wheel-carrying supports pivoted on the frame, whereby the angles of the wheels may be varied, bars Q Q, connected with said wheel-carrying supports, a rock-shaft, X, carrying a cross-head with which said bars are connected, mounted within convenient reach of the driver, and a latch-bar adapted to lock said rock-shaft after it has been adjusted, substantially as set forth.

21. In a road-making machine, the combination of a supporting-frame, wheel-carrying supports pivoted on the frame in substantially the manner described, reversible bars Q Q, connected with said wheel-carrying supports, they being notched, as at q, on one side, and having pins q' q', a holder with which the notched portions of the bars engage, and a rock-shaft situated within convenient reach of the driver and carrying a cross-head with which the said pins q' q' engage, substantially as set forth.

22. In a road-making machine, the combination of a supporting-frame, a diagonally-arranged scraper carried thereby, supporting-wheels O O′, the wheel O being provided upon its outer face with a groove, O^3, a cap, Z, which confines the wheel upon its axle, provided with a groove corresponding with groove O^3, and a series of anti-friction balls mounted in the seat formed by said grooves and adapted to take the end-thrust of the wheel caused by the diagonal arrangement of the scraper, substantially as set forth.

23. In a road-making machine, the combination of the supporting-frame, a diagonally-arranged scraper carried thereby, supporting-wheels O O′ on opposite sides of the frame, wheel O being provided upon its outer face with anti-friction bearings, the wheel O′ being provided on its inner face with anti-friction bearings, the corresponding bearings on the axles, and the interposed anti-friction balls, substantially as set forth.

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

FRANCOIS T. LOMONT.

Witnesses:

FRANCIS A. LOMONT,

WM. PASTMYER.