

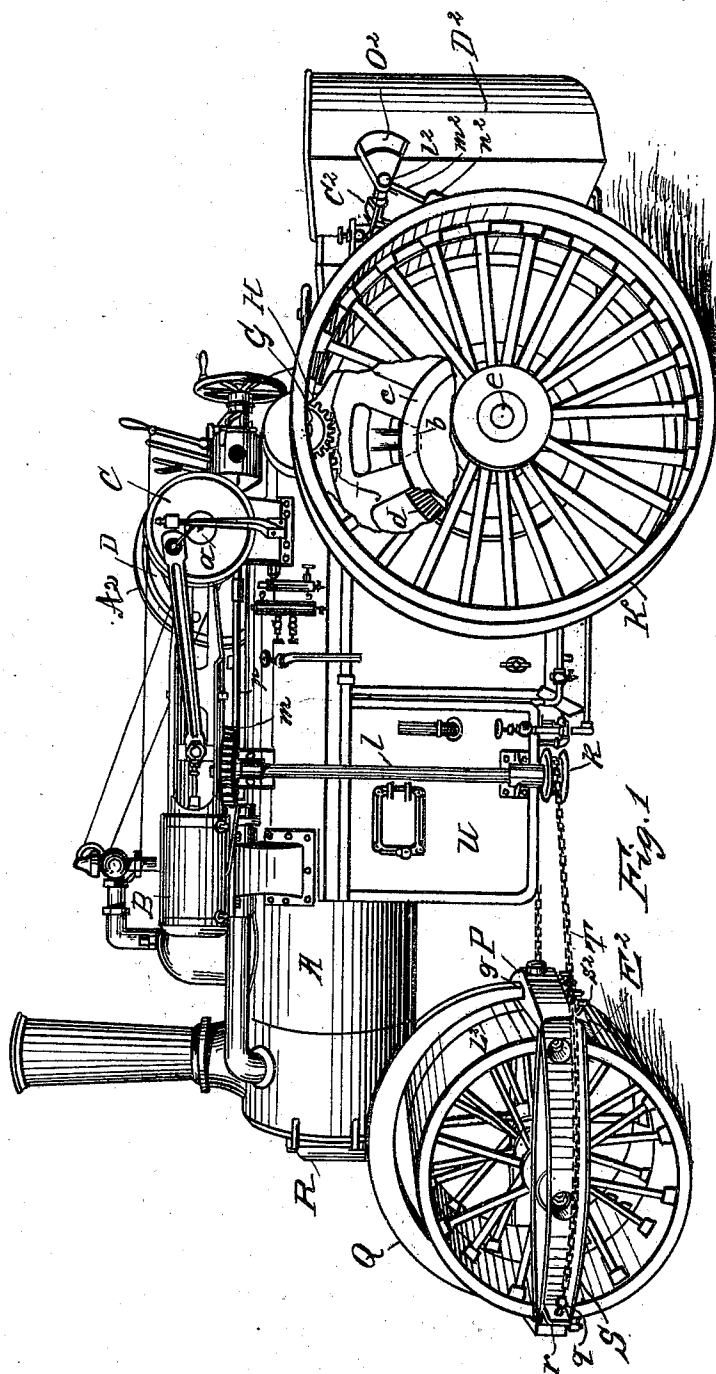
(No Model.)

3 Sheets—Sheet 1.

C. O. HEGGEM.
STEAM STREET ROLLER.

No. 554,421.

Patented Feb. 11, 1896.



WITNESSES
Theo. Hiller
Chas. M. Ball

INVENTOR
Charles O. Heggem
By *W. K. Miller*
Attorney

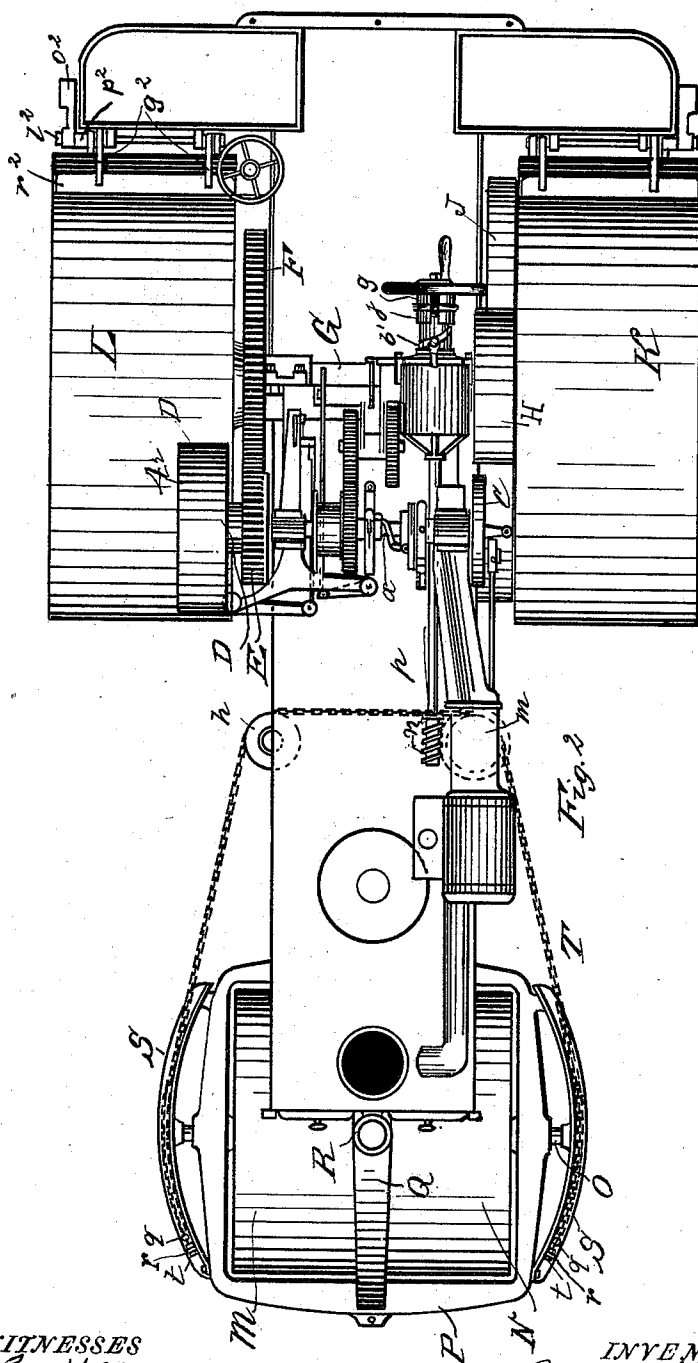
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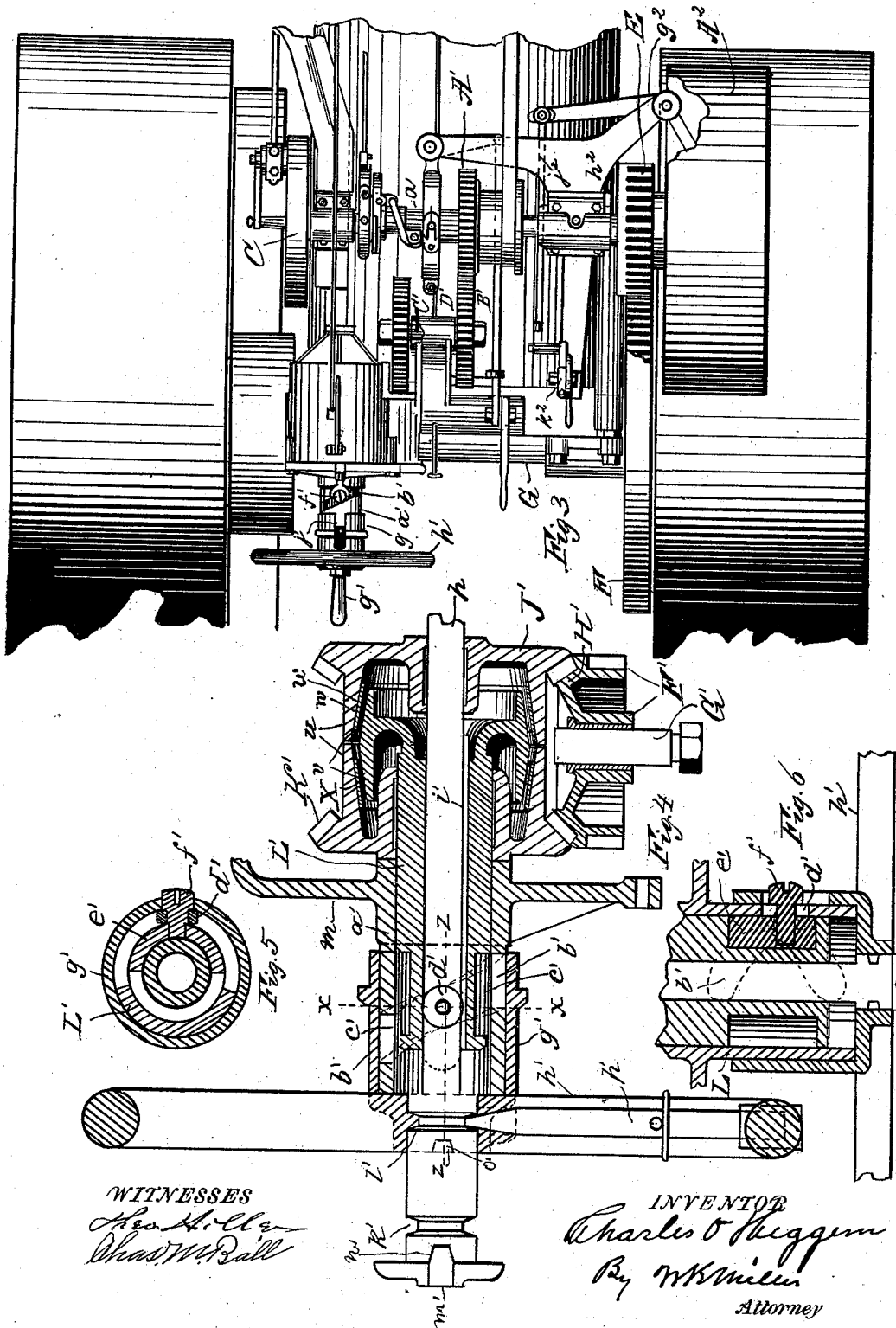
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UNITED STATES PATENT OFFICE.

CHARLES O. HEGGEM, OF MASSILLON, OHIO, ASSIGNOR TO THE RUSSELL
& CO., OF SAME PLACE.

STEAM STREET-ROLLER.

SPECIFICATION forming part of Letters Patent No. 554,421, dated February 11, 1896.

Application filed November 5, 1894. Serial No. 528,003. (No model.)

To all whom it may concern:

Be it known that I, CHARLES O. HEGGEM, a citizen of the United States, and a resident of Massillon, county of Stark, State of Ohio, have invented a new and useful Improvement in Steam Street-Rollers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification.

My invention relates to improvements in steam street or road rollers; and it consists of certain features of construction and combination of parts, which will be hereinafter described and claimed.

Figure 1 is a side elevation of a street-roller, illustrating my invention. Fig. 2 is a plan view showing the appliances for turning the guide-wheel to direct the machine. Fig. 3 is a similar view of a part of the appliances for guiding the machine, enlarged. Fig. 4 is a longitudinal section of guiding mechanism, showing the parts adapted for hand or power steering. Fig. 5 is a cross-section from *x* to *x*. Fig. 6 is a longitudinal vertical section from *z* to *z*.

A represents the steam-boiler, on which is mounted steam-cylinder B, having a pitman connection with crank-wheel C, mounted on cross-shaft *a*. On the other end portion of said shaft is placed a clutch-wheel D, on the hub of which is secured a spur-wheel E. (See Figs. 2, 11, and 12.) Wheel E engages wheel F on shaft G, on the opposite end of which is mounted a spur-pinion H, that engages gear-wheel J, which carries bevel-pinions, as *b*, that engage the two bevel-wheels *c* *d*, that are connected, one with the axle-shaft *e*, the other with the hub of roller K, thus forming a continuous train of driving gear-wheels, connecting the piston of the engine and transmitting power through the wheels E, F, H and J and the equalizing-gears to both of the large rear rollers, K and L.

The front or guide rollers, M and N, are journaled loosely on shaft O, secured in frame P. In the front and rear sides of the frame P are provided sockets in which are pivotally secured the prongs *g* of the swivel-yoke Q. At the top of the yoke Q is provided a spindle portion that enters and is journaled in

journal-box R. Secured to the front side of the smoke-box, and to the right and left sides of frame P are circular angle-bars S, that form a support for the chain T, and through which the chain is connected with the guide-roller frame P.

At the lower right-hand side of the water-tank U a chain-pulley *h*, and at the left-hand side a chain-wheel or sprocket *k*, is mounted on shaft *l*, journaled in suitable bearings secured to the water-tank and boiler, at the upper end of which is provided a worm-wheel *m* that engages a worm *n* on horizontal shaft *p*, that extends back to a hand and power actuating mechanism, that will be hereinafter explained.

The guide-chain T is placed about the pulley *h* and sprocket-wheel *m*, the ends placed on the flanged circular supports S and secured to eyebolts *q* that are passed through lugs *r* on front end of bar S, and to draw the chain tight about the circular frame S and wheels *h* and *m* the nuts *t* are turned onto the threaded portion of the eyebolt *q*. I wish to call particular attention to this arrangement and application of the guide-chain. The circular form of the chain-supports S serves to take up slack and keep the chain tight; nor can there be any transverse movement of the frame P and rollers N and M, as the chain is held against movement by the worm *n* engaging the worm-wheel *m*, and can only be moved by the hand or power guiding mechanism, which I will now describe.

A' represents a spur-wheel mounted on the engine-shaft *a*, as shown, said wheel engaging a similar wheel B', mounted on a shaft C', journaled in bracket D'. On the left-hand end of said shaft C' is mounted a similar wheel that engages wheel F' on shaft G', (see Fig. 4,) and on said shaft is mounted a miter or bevel wheel H', that engages a similar wheel J', mounted on shaft *p*, and a similar wheel mounted on sleeve L', that is loosely mounted on shaft *p*. On the inner face of the wheels J' and K' are provided flanges *u*, having tapering inside faces that form tapering sockets *v*, that are rotated in opposite directions by bevel-wheel H', and on the front end of the sleeve L' is provided a double-coned head X,

adapted to engage the tapering face *v* of the flange *u*, on which is secured a leather facing *w*.

The sleeve *L'* is journaled in frame-piece *M'* that is secured to the boiler; the cylinder portion *a'* projected rearwardly and is provided with a helix or curved slot *b*, as shown in Fig. 3 and indicated by the dotted lines in Fig. 4. At the rear end portion of the sleeve *L'*, which is secured in a sliding relation with the shaft *p* by the spline *i*, as shown in Fig. 4, is provided an annular groove *c'*, in which is placed a roller, as *d'*, loosely secured to a semicircular block *e'* by the pin *f'*. A sleeve, as *g'*, integral or connected with the hand-wheel *h'*, is passed onto the cylinder portion *a'* of the support *M*, the slot *j'* to receive the outwardly-projected end of the pin *f'*. (See Fig. 3.) The rear end portion of the shaft *p* is enlarged, as shown in Fig. 4, and in the enlarged portion are provided annular grooves *k'* and *l'*, and at the end is secured a cap portion *m'*, having a forwardly-projected lug *n'*, adapted to enter socket *o'* in the rear face of the hub of the hand-wheel *h'*, and in said wheel and carried thereby is provided a locking-bolt *p'*, the inner end of which is adapted to pass alternately into the grooves *k'* and *l'*.

Figs. 2 and 4 illustrate the parts in position, adapted for power steering, the roller *d'* at the central portion of the helix *b'*. The coned head is held from engagement with the wheels *J'* and *K'*, which are continuously rotated, by the described gear connection with the engine-shaft. Now to throw the steering mechanism into engagement to turn the guide-wheels to the right or left, the hand-wheel *h'* is turned to carry the roller *d'* toward the end of the helix, by which the sleeve *L'* will be moved forward or back to carry the cone-head *X* into engagement with one of the wheels *J'* or *K'* to rotate the shaft *p* and worm *n* to operate the mechanism connecting the worm in the guide-wheel frame.

To adjust the machine for hand-steering, the bolt *p'* is drawn from groove *l'*, the wheel and sleeve *g'* drawn back to the rear of pin *f'*, the lug *n* in the socket *o'*, and the bolt passed into groove *k'*. The wheel is now engaged with the shaft *p* and may be rotated by the handle *g'* to rotate the worm *n*, wheel *m*, sprocket-wheel *k*, and chain *T* to turn the frame *P*.

On the right-hand end of the engine-shaft *a* is mounted a fly-wheel *A*², having the rim overhung, to form an inside clutch. To operate the clutch a bell-crank *g*² is pivoted to a support, as *h*², one end of said crank to rest in the groove *c*² in sleeve *B*², the other end having a link connection *j*² with an actuating hand-lever *k*². This clutch feature is one of great value in street or road rollers, a machine which in use frequently drops into positions it cannot readily be started from, an initial point by the engine, when coupled to the machine, but if when means as described are provided, the engine may be uncoupled from the machine, and put into operation, and when

a considerable speed has been attained, the clutch-shoes may be thrown into engagement with the fly-wheel *A*², the momentum of which will greatly assist in starting the machine.

To clean the rear wheels or rollers, *K* and *L*, a scraper is applied, as shown in Fig. 1, and a bracket, as *C*², is secured to the front side of the water-tank *D*². In the bracket is journaled a supporting-shaft *l*², to which are secured arms, as *m*², that carry the scraper *n*², and to hold the scraper against the roller a weight, as *O*², is secured on the shaft, as shown, (see Fig. 13,) and to hold the scraper away from the roller the counterweight may be thrown forward of the shaft. On the shaft *l*² is provided a sleeve *p*², to which arms *g*² are secured, on the outer end of which is placed a scraper *r*² similar to *n*². (See Fig. 2.) This is provided to scrape the roller when on reverse movement.

To clean the front rollers, a scraper *E*² is provided, which is pivotally supported on the roller-frame by a hanger, as seen in Fig. 1.

I wish to call attention to construction of the guide-wheel support and yoke *Q*, by which guide-wheel frame is connected to front end of the machine. As heretofore constructed the yoke has been placed with the prongs transverse, or either side of central line of draft, which arrangement limited the vertical end movement of the guide-rollers. To remedy this, I have placed the yoke *Q* on a line horizontally through the boiler, the prongs astride the guide-rollers and pivotally connected with the front and rear sides of the frame *P*, thus giving the end portions of the frame and rollers a wide range of vertical movement, with substantially little or no lateral movement of the front end of the boiler, and, furthermore, the strength of the yoke is applied in the right direction, the truss being in the line of movement, there being little or no lateral pressure of the yoke.

Having thus fully described the nature of my invention, what I claim is—

1. The combination in a steam street-roller of the guide-rollers, and means for manually operating said rollers to guide the machine, of an interchangeable power mechanism, comprising bevel-wheel *H'*, engaging similar wheels *J'* and *K'*, having flanges *u*, that form concaved sockets, a sleeve *L'*, supported in the cylinder portion of the support *M*, and engaged with shaft *p*, by a spline as *i'*, having at its front end a double coned or truncated head *X*, adapted to engage the concaved sockets in the wheels *J'* and *K'*, and at its front end an annular groove *c'*, block *e'* in said groove, roller *d'* and pin *f'*, helix or curved slot *b'*, sleeve *g'*, having a slot as *j'*, and the hand-wheel *h'*, groove *l'*, and bolt *p'*, by which said wheel is held against longitudinal movement on the shaft *p*, but may be rotated with the sleeve *g'*, to move the roller *d'*, in the helix, to carry the sleeve forward or back to engage the cone *X*, with the wheels *J'* and *K'*, and a gear connecting the wheel *H'* with

the engine-shaft, substantially as described and for the purpose set forth.

2. The combination in a guide-wheel steering apparatus, of the shaft *p*, worm and worm-wheel and chain, adapted for engagement with the shaft *p*, to rotate the shaft and worm, to operate the guide-wheel, and a power steering mechanism, comprising a friction-surface, having a geared connection with the engine, by which they are continuously rotated in opposite directions, friction-surfaces adapted to be moved into engagement with the continuously-rotating clutch-surfaces, and rotated thereby, to turn the shaft *p*, in desired direction, the support *M*, cylindrical projection *a'*, spiral groove *b'*, sleeve *L'*, groove *c'*, block *e'*, roller *d'*, and pin *f'*; sleeve *g'*, having a horizontal slot *j'*, therein, roller *d'*, pin *f'*, and the hand-wheel *h'*, substantially as described and for the purpose set forth.

3. The combination in a combined hand and power steering mechanism, of the slidable sleeve *L'*, having an annular groove as *c'*, therein, a rearwardly-projected cylindrical support *a'*, having therein a helix or spirally-inclined groove or slot *b'*, the pin *f'* in said slot, and secured to block *e'* in groove *c'*, sleeve *g'*, having a longitudinal slot *j'*, to embrace the pin *f'*, and a hand-wheel to rotate the sleeve *g'*, to move the pin *f'* in the slot, to slide the sleeve *L'*, on shaft *h'*, to engage and disengage the friction-surfaces connecting the sleeve *L'* and shaft *h'*, with the engine, substantially as described.

In testimony whereof I have hereunto set my hand this 23d day of October, A. D. 1894.

CHARLES O. HEGGEM.

Witnesses:

CHAS. R. MILLER,
W. K. MILLER.