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C. F. HINMAN.

ROAD ROLLER.

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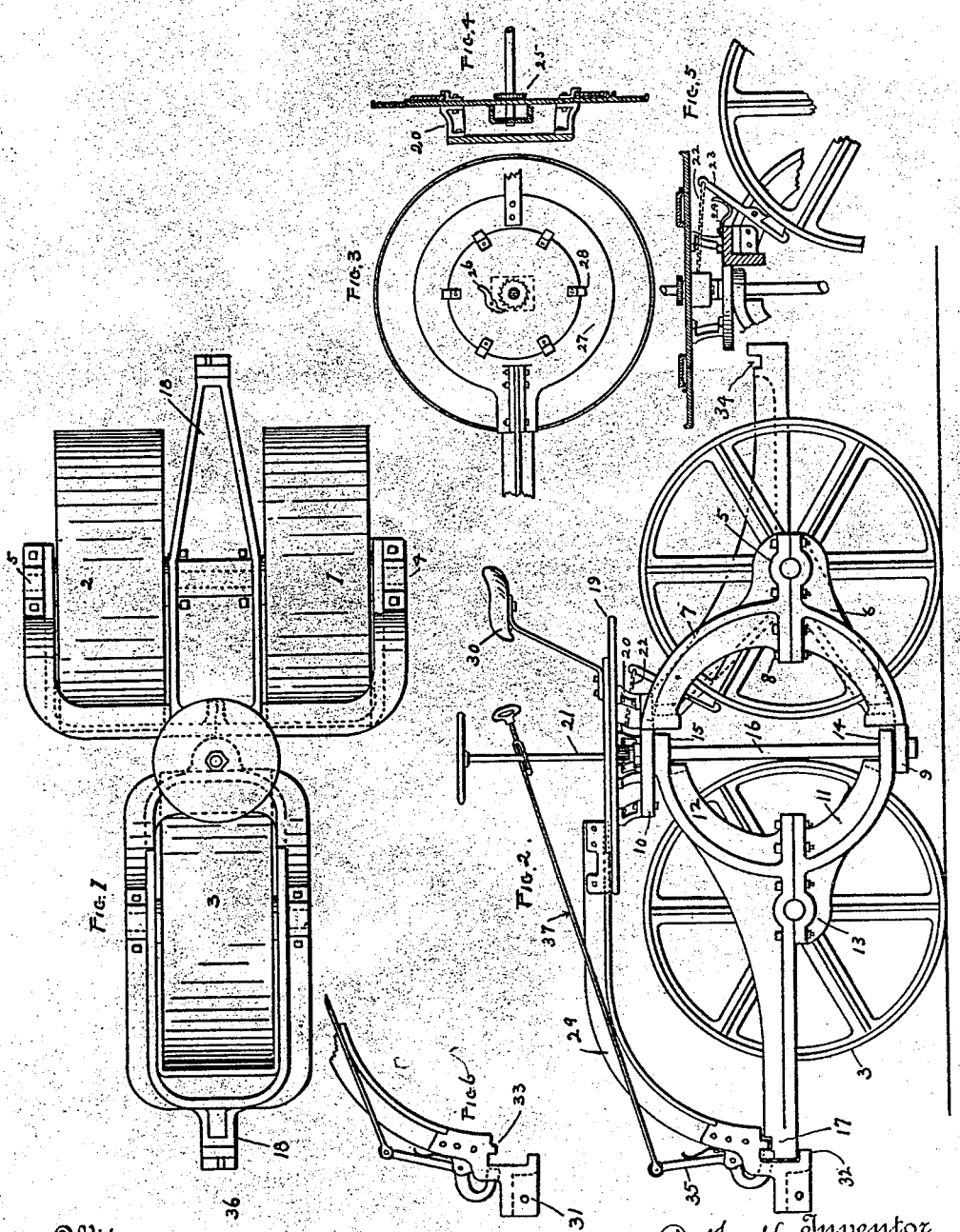

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ROAD-ROLLER.

SPECIFICATION forming part of Letters Patent No. 649,423, dated May 8, 1900.

Application filed September 22, 1897. Serial No. 652,667. (No model.)

To all whom it may concern:

Be it known that I, CLEMENT F. HINMAN, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Road-Rollers, of which the following is a full, clear, and exact specification.

My invention relates more particularly to a type of road-roller known as the "reversible horse-roller," usually consisting of rollers arranged in a frame or other support and a swinging draft arm or sweep pivotally attached in such a manner that the team may be turned about the machine to reverse the direction of travel without turning the rolls or framework around. Rollers of this class have heretofore been made with one or more rolls on a single axle inclosed within a frame, with various devices for connecting the draft to the frame and changing the direction of travel. One of the serious objections to rollers of this class as heretofore constructed is that in having a single axle for supporting the frame the frame depends for its maintenance in a level position upon the tongue or other draft connection, the outer end of which is supported by the necks of the draft-animals, so that in case a brake is applied to the rolls the tendency of the rolls to turn causes a downward pressure on the frame and tongue, and consequently subjects the draft-animals to unnecessary burden and inconvenience, as well as jeopardizing their safety. Another serious objection to such type of rollers as heretofore constructed is that, the entire roller being on a single axial line, the extreme ends of the roller may rest on the solid portions of the road-bed, and thus prevent the intermediate rolls or portion of the rolls from bearing upon any soft or less-compact portions thereunder, and as a consequence the harder or denser portions would receive extreme compression, while the softer portions would escape sufficient pressure to produce proper density. A still further objection to the prior construction is the difficulty of turning such rollers around when driven about the streets or roads.

My invention is designed to overcome these and other defects hereinafter explained; and it has for one of its objects to make a roller which shall have a maximum width of track, as heretofore, and at the same time provide for a uniform degree of compression of the road-bed throughout the entire area of such track notwithstanding the variations in the initial density of the road-bed or the irregularities in its surface.

Another object of my invention is to provide a horizontal pivotal connection of the tongue or pole where it connects with the reversible sweep, which establishes draft connection with the draft-points at either end of the roller.

A further object of my invention is to provide a construction of roller in which the brake may be applied without bearing down upon the draft attachment; and a still further object is to provide a tricycle form of roller which may be readily turned in a small radius.

With these ends in view my invention consists in certain features of novelty in the construction, combination, and arrangement of parts by which the said objects and certain other objects hereinafter appearing are attained, all as fully described with reference to the accompanying drawings and more particularly pointed out in the claims.

In the said drawings, Figure 1 is a plan view of my improved roller, showing the operator's platform and draft-sweep removed. Fig. 2 is a side elevation thereof, showing the operator's platform and draft-sweep in position. Fig. 3 is a detail plan view of the operator's platform and the means whereby the draft-sweep is pivoted thereto. Fig. 4 is a transverse sectional view thereof. Fig. 5 is a vertical transverse sectional view of the operator's platform, showing the brake mechanism and a portion of one of the rear rolls; and Fig. 6 is a detail side elevation of one of the draft-sweeps.

In carrying out my invention I employ three rolls 1 2 3, which are arranged in overlapping track and preferably one at each corner of a triangle or in what might be termed "tripod" or "tricycle" fashion, the paired rolls 1 and 2 being located at a considerable distance apart and the single roll 3 being arranged in line with the space between the pair 1 2 and being preferably of sufficient width to partly overlap each of the tracks of the rolls 1 and 2, so that the maximum width of road-bed

traversed by the sum of the three rolls will be uniformly compressed without seam. The roll 3 is preferably independent of the rolls 1 and 2, so as to be capable of vertical movement, whereby it may sink into any depressions should there be such in the road-bed spanned by the rolls 1 and 2 or may rise over unyielding surfaces, stones, or lumps, while either or both of the rolls 1 2 sink into depressions or into the more yielding portions of the road-bed on either side of the track of the roll 3, thus compressing the entire area traversed by the three rolls with a substantially-uniform density notwithstanding any irregularities in the surface of the road-bed or in its density which might have existed prior to the passage of the roller thereover. The roll 3 is also preferably connected to the other two by a joint or connection capable of lateral deflection, so that the roller may be turned around in a comparatively-small radius when driving along the roads or around street corners. With a view to accomplishing these ends I mount the rolls 1 and 2 upon a common shaft or axle 4, each end of which is journaled in a box 5, formed on or secured to a frame which extends around the rolls. This frame preferably consists of two members, the lower one, 6, being joined to the upper one, 7, by suitable bolts or other devices 8, and the members 6 7 being each provided with one section of each box 5. The member 6 extends downwardly and then across the faces of the rolls 1 and 2, while the member 7 extends upwardly and across in a similar manner, thus forming what might be called a "fork" on each side. The cross-bars of the member 6 at a point intermediate the rolls 1 and 2 is provided with a perforated lug 9, and at a great distance above this lug 9 the cross-bar of the member 7 is provided with a perforated lug 10, which is enlarged so as to constitute a table for supporting superposed parts hereinafter described. The roll 3 is surrounded by a frame composed of two members 11 12, similar to the members 6 7, each being provided with one member of a journal-box 13, surrounding the shaft or axle of the roll 3. The member 11 where it crosses the face of the roll 3 and at a point just above the lug 9 is provided with a perforated lug 14, whose perforation coincides with that in the lug 9, while the member 12 immediately above the lug 14 is provided with a similar lug 15, having a perforation coinciding with the perforation in the table or lug 10, and passing downwardly through these four lugs and coupling the fore and aft rolls together is a king-bolt 16. The member 12 of the frame surrounding the roll 3 is carried forwardly or around the outer face of such roll and is there provided with a draft attachment 17, which will be presently described more in detail, while arranged between the two rolls 1 and 2 and journaled upon or otherwise secured to the shaft or axle 4 is a draft attachment 18, which projects rearwardly beyond the peripheries of the rolls 1 2. The upper end of this draft attachment 18 may be formed on or otherwise secured to the table or lug 10, whereby the draft attachment 18 is firmly held in its horizontal position.

Arranged above the table 10 is a platform 19, which is preferably supported at a distance above such table 10 by means of short angle-irons or standards 20, and journaled in the platform 19, concentrically with the king-bolt 16, is a brake-wheel shaft 21, to whose lower end is secured a chain or other connection 22, which is also attached to a brake-lever 23, pivoted to the upper end of the draft attachment 18 and carrying a brake-shoe, bearing against one of the rolls 1 2, the brake-shoe being held normally out of engagement by a spring 24 or other suitable means. Above the platform 19 the brake-wheel shaft 21 is provided with a ratchet 25, and secured to the platform is a pawl 26 in position to be conveniently operated by the foot of the operator.

Supported upon the platform 19 is a ring 27, pivotally held in place by a number of angle-irons 28, secured to the platform 19 and overlapping the inner edge of the ring. To one side of this ring is secured the outer end of the draft sweep or arm 29, while upon the other side is supported the operator's seat 30. Thus when the draft-sweep 29 is turned about the position of the seat 30 is also changed, while the brake-wheel remains always convenient to the hand of the operator. The lower end of the draft-sweep 29 is turned downwardly and provided with any suitable connection 31, whereby it may be secured to the tongue or other device (not shown) to which the draft-animals are hitched. This end of the draft-sweep is also provided with a flange 32, which engages under either of the draft connections 17 18, according to the direction in which the roller is driven, and with a lug 33, which engages in a notch 34, formed in each of the draft connections 17 18, the flange 32 holding the draft-sweep from upward movement, while the lug 33 imparts the direct pull to the draft connection 17 or 18. The draft-sweep 29 is held against accidental lateral movement by means of a latch 35, pivoted to the end of the draft-sweep and passing through a suitable passage therein, so as to engage in a socket 36, formed in each of the draft connections 17 18. This latch 35 may be operated from the seat of the operator by means of a pull-rod 37, having a loop passing around the brake-wheel shaft 21, as shown in Fig. 2.

With a roller thus constructed it will be seen that the two draft attachments 17 18 being in line with the king-bolt, which connects the fore and aft rolls together, the roller may be driven in either direction and the rear roll or rolls will follow the forward ones without the aid of any other guide or steering mechanism, and by virtue of this pivotal connection between the fore and aft rolls the roller may be

turned in a comparatively-small radius and without danger of injuring the pivotal connection between the rolls, inasmuch as the perforated lugs which connect their frames together are located at a great distance apart, and thereby insure against independent tipping action of the rolls. It will also be seen that the pressure of the brake upon the frame of the roller cannot in any manner depress the draft attachments or endanger the draft-animals, as heretofore. This desirable result is also due to the great distance between the points at top and bottom at which the two independent frames of the rolls are pivoted together, for it is readily seen that the application of a brake to either the fore or aft rolls could not strain such pivotal connection with its greatly-extended vertical bearing sufficiently to appreciably disturb the normally-horizontal position of either draft connection.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A roller having in combination fore and aft rolls; independent frames, for said rolls respectively, each having a draft connection at one end and their contiguous ends being pivoted together on a vertical axis extending between the peripheries of the fore and aft rolls and in line with said draft connections, the bearings of said vertical pivot being considerably elongated above and below the level of the roller-axes, substantially as set forth.

2. A roller having in combination fore and aft rolls; independent frames, for said rolls, pivoted together on a vertical axis between the rolls; a brake-lever secured to one of said frames and having a shoe bearing against one of said rolls; a vertical shaft having rotatable connection with the same frame and a chain connecting said shaft and lever, substantially as set forth.

3. A roller having in combination fore and aft rolls each having a frame, an elongated king-bolt connecting said frames together, a draft connection projecting from each of said frames, a draft-sweep pivoted concentrically with said king-bolt and adapted to connect with either of said draft connections, a brake and a brake-operating shaft arranged concentrically with said king-bolt, substantially as set forth.

4. A roller having in combination fore and aft rolls journaled on different axes, a draft connection projecting from each of said axes and a draft-sweep pivoted between said axes and adapted to swing from one draft connection to the other, substantially as set forth.

5. A roller having in combination fore and aft rolls, a draft connection projecting from each of said rolls, a draft-sweep pivoted between said rolls and having its end turned down to engage with either of said draft connections, and a latch on said downturned end of the draft-sweep for locking it in position, substantially as set forth.

6. A roller having in combination fore and aft rolls, a draft connection projecting outwardly from each of said rolls and having the notch 34, a draft-sweep pivoted between said rolls and having the flange 32 and lug 33, and a latch 35, substantially as set forth.

7. A roller having in combination fore and aft rolls, an independent frame in which said rolls are journaled respectively and each frame having widely-separated vertically-alined lugs, a king-bolt passing through said lugs, and pivoting said frames together on a vertical axis, and a draft connection for said roller, substantially as set forth.

8. A roller having in combination the upwardly-projecting frame member 7, the downwardly-projecting frame member 6, the upwardly-projecting frame member 12, the downwardly-projecting frame member 11, a perforated lug on each of said frame members arranged in vertical alinement, a king-bolt passing through said lugs, a draft attachment connected to one of said frames, and the rolls journaled in said frames respectively, substantially as set forth.

9. A roller having in combination fore and aft rolls, an independent frame in which said rolls are journaled respectively, and each of said frames having vertically-alined widely-separated lugs, a king-bolt passing through said lugs, the draft attachment 18 secured to one of said lugs and being supported by the axle of one set of the rolls, a draft attachment projecting from the other of said frames, the platform 19 supported upon one of said lugs and a draft-sweep pivotally supported upon said platform and adapted to connect with either of said draft connections, substantially as set forth.

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