(No Model.) 2 Sheets—Sheet 1.

G. N. LAKE.

COMBINED CLOD CRUSHER AND LAND ROLLER,

No. 353,952. Patented Dec. 7, 1886.

Fig. 1.

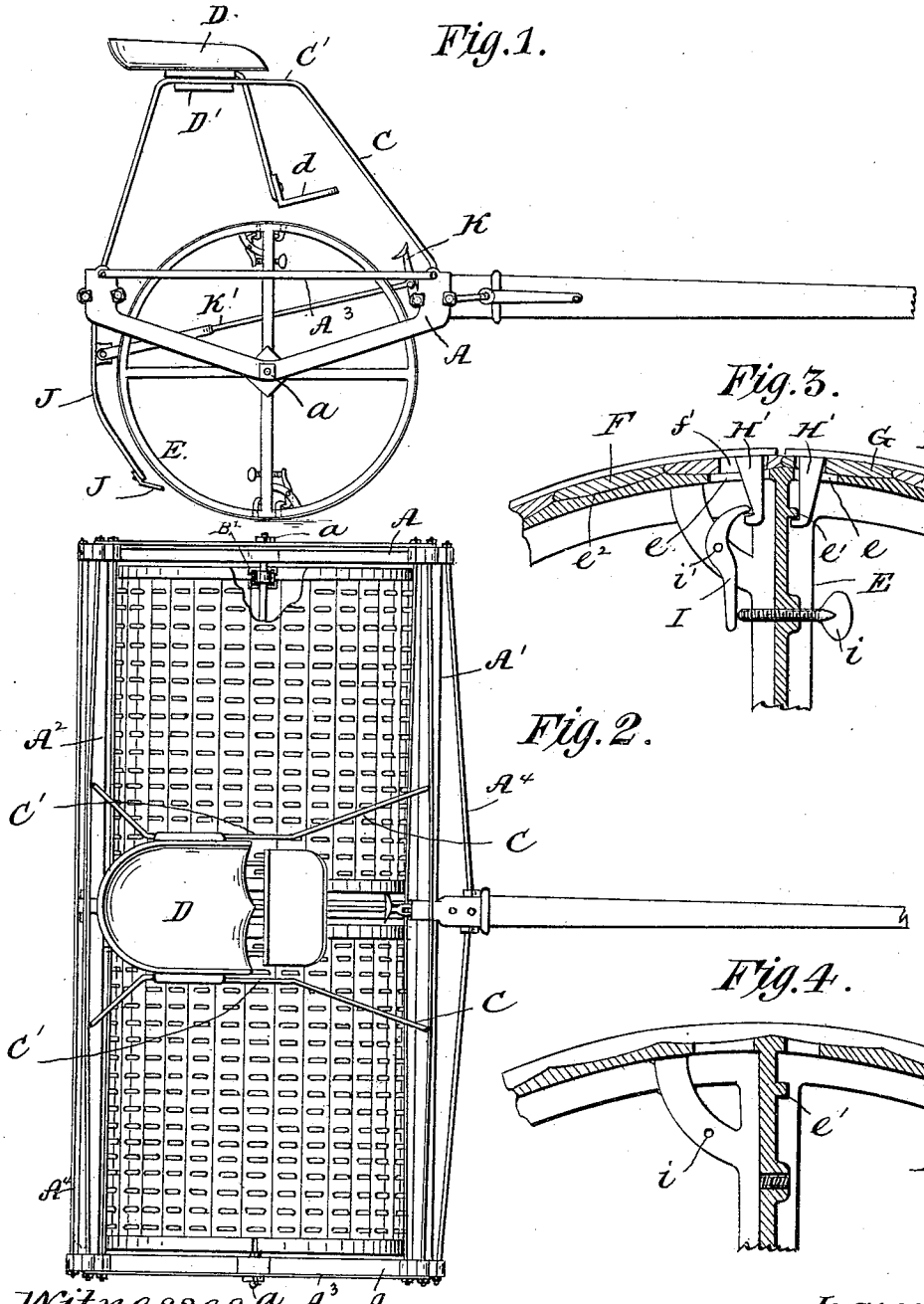


Fig. 3.

Fig. 2.

Fig. 4.

Witnesses
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(No Model.) 2 Sheets—Sheet 2.

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Fig. 5.

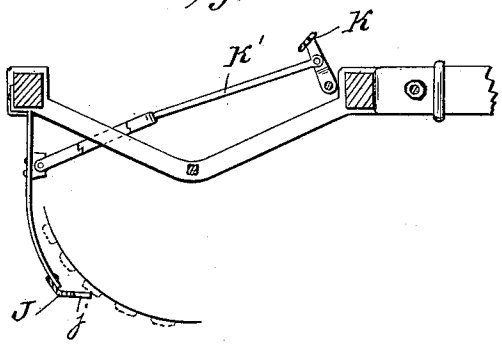


Fig. 6.

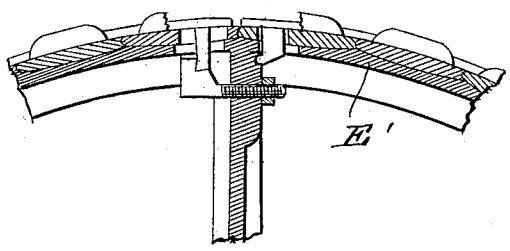


Fig. 7.



Fig. 8.

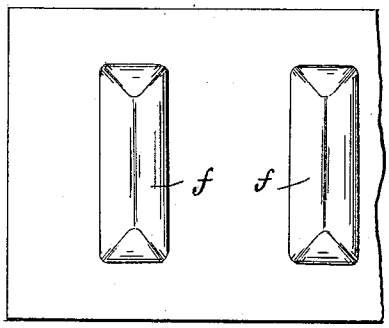


Fig. 9.

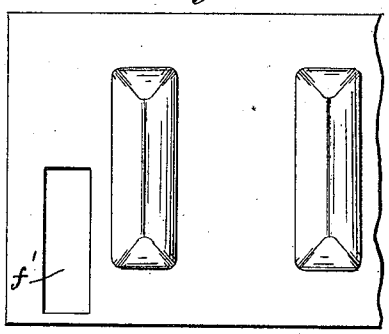


Fig. 10.

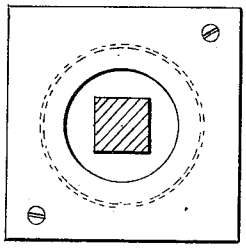


Fig. 11.

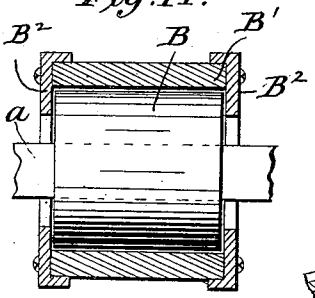


Fig. 12.

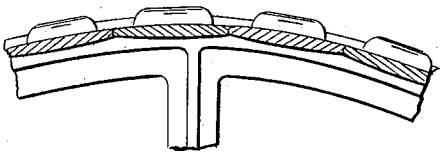


Fig. 13.

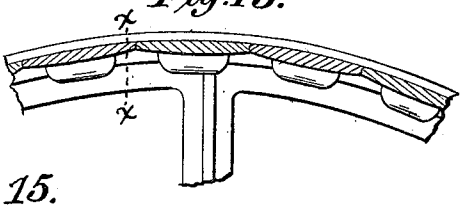
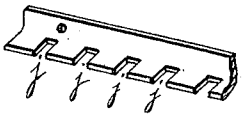


Fig. 14.



Fig. 15.



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UNITED STATES PATENT OFFICE.

GEORGE N. LAKE, OF NORTH LAWRENCE, KANSAS.

COMBINED CLOD-CRUSHER AND LAND-ROLLER.

SPECIFICATION forming part of Letters Patent No. 353,952, dated December 7, 1886.

Application filed June 8, 1885. Serial No. 168,062. (No model.)

To all whom it may concern:

Be it known that I, GEORGE N. LAKE, a citizen of the United States, residing at North Lawrence, in the county of Douglas and State of Kansas, have invented certain new and useful Improvements in Combined Clod-Crushers and Land-Rollers; 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 and figures of reference marked thereon, which form a part of this specification.

This invention relates to land-rollers, and aims to provide a roller which may be readily adapted for use as a clod-crushing roller or for smoothing purposes; and it consists in certain constructions and combinations of parts, which will be hereinafter described, and pointed out in the claims.

In the drawings, Figure 1 is a side view, and Fig. 2 is a plan view, of my roller. Fig. 3 is a detached section of the roller near the end thereof. Fig. 4 is a detached section of the wheel or frame of the roller. Fig. 5 is a sectional view illustrating the scraper-hoe and the devices for operating the same. Fig. 6 is a detached section similar to Fig. 3 and illustrating a modification. Fig. 7 is an end view of one of the slats. Fig. 8 is a plan view of a portion of one of the slats. Fig. 9 is a plan view of the end of the slat provided with the slot for the arm of the clamping-band. Figs. 10 and 11 are detailed views illustrating the form of boxing which is preferred. Fig. 12 is a sectional view of a portion of the roller, with the slats arranged for use as clod-crushers. Fig. 13 is a similar view showing the slats reversed and in position for use as a smoothing-roller. Fig. 14 is a detailed sectional view on a bent line, X X, Fig. 13; and Fig. 15 is a detailed view of a section of the scraper-shoe, all of which will be described.

The main frame of the roller consists of bearings A A, front bars, A′, rear bar, A^2, end bars, A^3, and truss-rods A^4. The bearing-frames are depressed centrally, and are provided at such points with bearings *a* for the trunnions of the rollers. This trunnion is preferably at the end of a shaft which extends through the roller sections or section, and is provided at suitable points with cylindrical portions B, which fit bearings B′ of the end ring or wheel of the roller-frame. The roller-frame is provided at the opposite end of the bearing B, with flange-plates B^2, the radial flange of which extends inward beyond the bearing-surface between the bearing-surfaces of parts B B′, and prevents the ingress of dirt and the egress of waste and oil or other lubricant.

The ends of the bearing-frames A being elevated above the bearings of the rollers, enables the application of the draft at a higher point than if said parts were formed in a continuous horizontal plane. The bars A^3 extend between and connect the upper ends of the bearing-bars A. The front and rear bars, A′ A^2, connect the upper ends of the several bars A together. The truss-rods A^4, extending between the bearing bars A, and being supplied with nuts, by which they may be tightened, serve to enable the clamping of such bars securely together and the tightening up of such connections from time to time as they may become loosened by wear.

On the supporting-frame I mount the seat-bars C C, which have upper horizontal portions or rails, C′, extended in the line of motion of the machine. The seat D is provided with a suitable foot-rest, *d*, and has on its under side guides D′, which slide on the rails C′. The parts D′ C′ are arranged close to the plane of the seat D, so that the operator, by resting with his hands upon the rail C′, can throw his weight almost entirely off the seat and adjust the same back or forth without dismounting from the machine. The adjustment of this seat back or forth, as is well understood, is for the purpose of increasing the power of the driver's weight upon the roller or of reducing such power, as may be desired.

The roller may be made in one, two, or more sections, as desired, and is constructed with end wheels, E, slats F, clamping-rings H, and the clamp devices presently described. The spokes and tires of the wheels E are preferably formed of angle iron, the tire being provided with an inwardly-projecting flange, E′, which is provided on opposite sides of one or more of the spokes with slots *e*, through which to insert the arms of the clamping-rings, and the spokes adjacent to said slots *e* are provided with a lug, *e′*, for engagement by the hook or arm of the clamping-band. The flange E′ may also be formed with concavities e^2, fitted

to receive the slats or rim-sections of the roller. These sections F are provided on one side with clod-crushing projections *f*, and have their other sides made smooth for use as a smoothing-roller. These sections are rested at their opposite ends on the flanges E′ of their end wheels, and may be removably secured to such flanges by screws; but I prefer to secure them by the clamping-band H. This clamping-band may be extended entirely around the roller; but I prefer to employ two bands to each end of the roller, each one of said bands extending but half-way round the said roller. I provide these bands at their opposite ends with inwardly-projected hooks or arms H′.

In the application of the parts the rim sections or slats are rested on the flanges E′. One arm H′ of the clamping-band H is passed through a slot, *f′*, in one of the sections F, thence through the slot *e* of the flange E′, and is engaged by the lug *e′*, as shown in Fig. 3. The other arm H′ of said band is passed through slots *f′ e* on the opposite sides of the wheel, and are secured by the clamp. This clamp may consist of a bolt inserted through an opening in the spoke and having one end hooked to engage the arm H′ of the band H, and its other end provided with a nut, by which it may be tightened, as is shown in Fig. 6, by which construction the band may be tightened and secured on the wheel; but I prefer to employ the construction shown in Fig. 3. This clamp is formed of a lever, I, and a screw, *i*. The lever is pivoted at *i′*, and has its upper end arranged to engage the hooked arm H′, and its lower end is arranged in position to be engaged and actuated by the screw *i*, which is threaded through the spoke, as clearly shown in said Fig. 3. By this construction the band may be tightened and the rim sections or slats be securely held to the roller.

By releasing the clamp the rim-sections may be removed and reversed on the wheel, so as to present a smooth or clod-crushing surface. I form these sections with one edge rounded and the other edge grooved, forming practically a tongue-and-groove joint between the sections. The shoe J is supported on the lower end of the supporting-bar J′, and may bear at all times against the surface of the roller. I prefer, however, to employ a foot-lever, K, and a link, K′, connecting said foot-lever with the arm J′, so that the shoe may be adjusted against or away from the roller at pleasure. The shoe J is provided on one edge with a series of slots, *j*, which will escape the projections *f* when the roller is being used as a clod-crusher. The other edge of the shoe is smooth, and said shoe may be removed or reversed on its support to adapt it to the roller, whether said roller is used as a clod-crusher or for smoothing purposes.

It will be observed that the concavities e^2 are formed in the flange or periphery of the wheels in succession, so that the edges of the slats may abut and form a continuous shell. The slats or rim-sections, in cross-section, have their opposite sides preferably convexed, so that when in place they form a smooth unbroken surface, no matter which side is outermost. The concavities or concaved portions of the periphery of the wheel correspond with the transversely-convexed sides of the slats or rim-sections, to form a seat therefor and present a firm bearing from edge to edge.

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

1. A land-roller comprising wheels or supporting-frames, and reversible slats or rim-sections provided on one side with clod-crushing projections, substantially as set forth.

2. A combined crusher and land-roller, constructed substantially as herein shown and described, and consisting of a frame carrying a shaft provided with wheels having flanges and reversible slats secured to the said flanges, having their opposite sides convexed transversely and provided upon one side with teeth or projections, substantially as set forth.

3. In a combined clod-crusher and land-roller, the combination, with the wheels having flanges provided with concavities, of the slats or rim-sections convexed transversely upon the opposite sides and provided with teeth or projections upon one side, substantially as herein shown and described, whereby said slats can be reversed to form a crusher or roller, as set forth.

4. In a combined clod-crusher and land-roller, the slats or rim-sections made, substantially as herein shown and described, with both sides convexed transversely, whereby the said slats are adapted to be reversed and still form a cylindrical shell, as set forth.

5. A land-roller consisting of wheels or supporting-frames, reversible slats or rim-sections provided on one side with clod-crushing projections, and a retaining-strip fitted over the slats, and a clamp for securing and tightening said strips, substantially as set forth.

6. In a land-roller, the combination of the wheel or supporting-frame, the rim-sections, a retaining-strip having one end held to the supporting-frame and provided at its other end with an inwardly-projected hook-arm, a lever having one end engaged with said arm, and a screw engaging the other end of the lever, substantially as set forth.

7. The combination, with a roller having reversible slats or rim-sections provided on one side with clod-crushing projections, a scraper-support, and a scraper reversible on said support and provided on one edge with recesses corresponding to the projections on the slats of the roller, substantially as set forth.

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

GEORGE N. LAKE.

Witnesses:
JOHN D. FURGASON,
M. W. LAKE.