(No Mode.

A. HELMAN.

COMBINED LAND ROLLER, CLOD CRUSHER, AND HARROW.

No. 289,258. Patented Nov. 27, 1883.

Fig. 1.

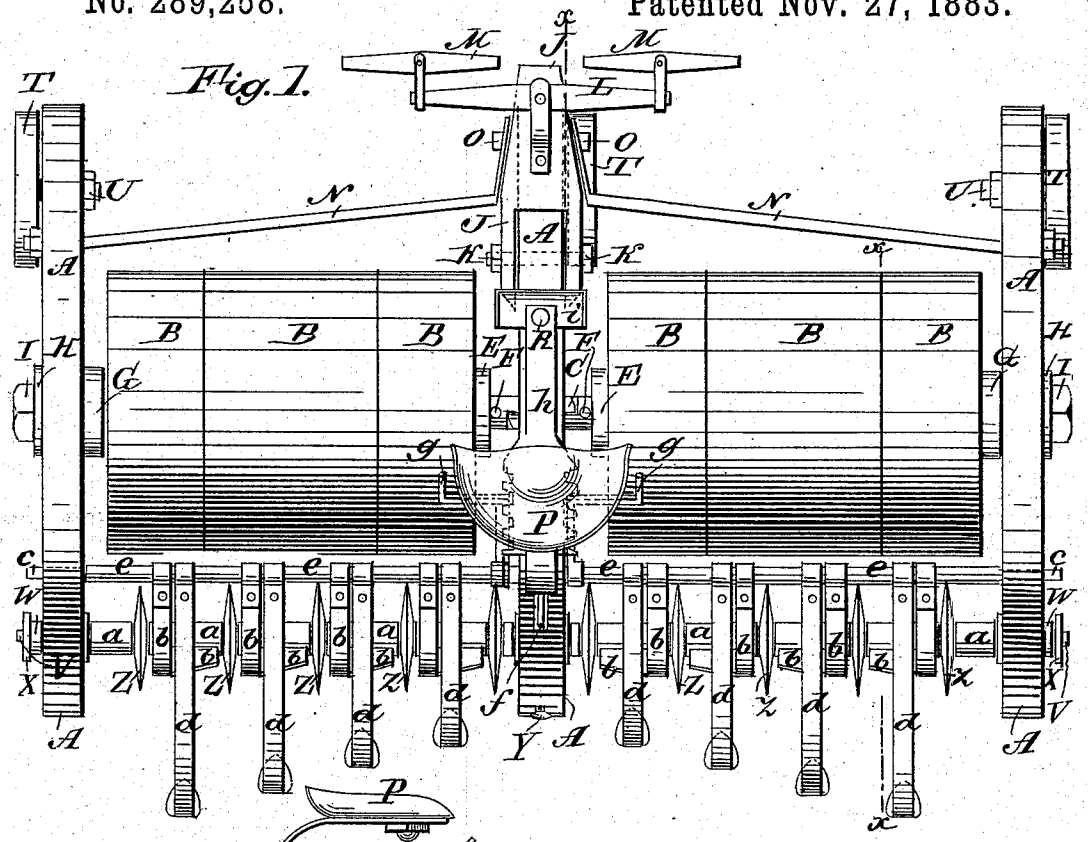


Fig. 2.

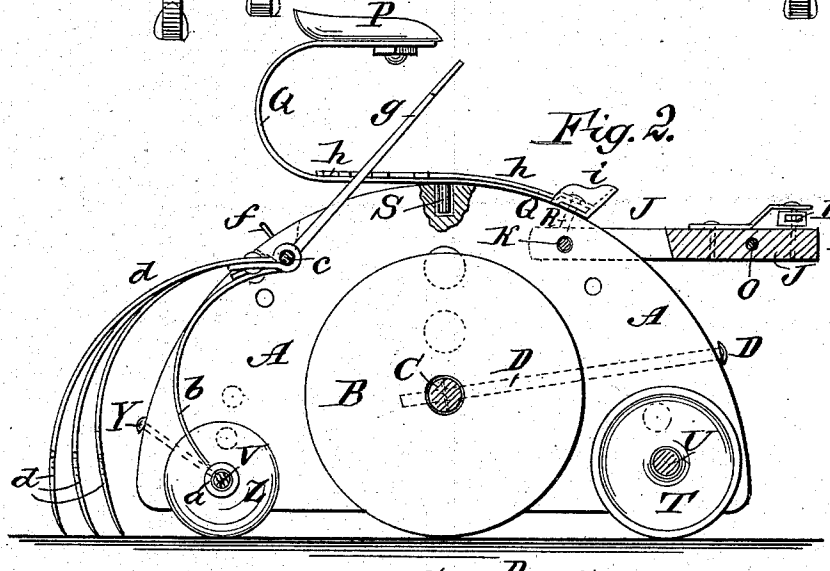


Fig. 6.

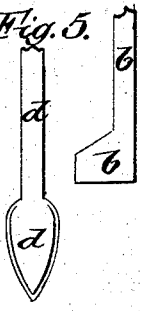


Fig. 5.

Fig. 4.

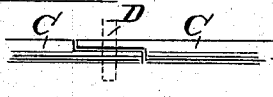
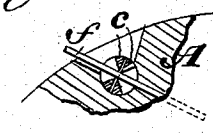


Fig. 3.



WITNESSES:

Alexander

B. G. Underwood.

INVENTOR:

A. Helman,

BY Munn & Co

ATTORNEYS.

N. PETERS. Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

ANDREW HELMAN, OF WINFIELD, KANSAS.

COMBINED LAND-ROLLER, CLOD-CRUSHER, AND HARROW.

SPECIFICATION forming part of Letters Patent No. 289,258, dated November 27, 1883.

Application filed July 30, 1883. (No model.)

To all whom it may concern:

Be it known that I, ANDREW HELMAN, of Winfield, in the county of Cowley and State of Kansas, have invented a new and useful Improvement in a Combined Land-Roller, Clod-Crusher, and Harrow, of which the following is a full, clear, and exact description.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of my improvement. Fig. 2 is a sectional side elevation of the same, taken through the line *x x*, Fig. 1. Fig. 3 is a sectional elevation of the jointed tooth-shaft and a part of the center plate. Fig. 4 is a plan view of the jointed middle part of the roller-shaft. Fig. 5 is a rear elevation of the lower part of one of the teeth. Fig. 6 is a rear elevation of the lower part of one of the scrapers.

The object of this invention is to facilitate the smoothing and pulverizing of soil.

The invention consists in a combined land-roller, clod-crusher, and harrow constructed with three parallel upright plates connected by jointed shafts carrying rollers, circular cutters, cultivating-teeth, and scrapers, whereby the ground will be smoothed, the clods crushed, and the soil loosened. The jointed shaft that carries the cultivating-teeth and the scrapers is provided with levers, which engage with a catch-plate secured to the central plate and the seat-standard, so that the cultivating-teeth and the scrapers can be raised and held in a raised position. The front of the machine is supported by wheels pivoted to bolts secured adjustably to the forward corners of the three plates, as will be hereinafter fully described.

A are three semicircular plates or frames, which are arranged parallel with each other, with their straight edges downward and at such a distance apart as to receive between them the rollers B. Each of the rollers B is made in three parts, a wider middle part and narrower end parts, as shown in Fig. 1. The rollers B are placed upon a shaft, C, which is made in two parts jointed to each other at their inner ends within the bearing in the center plate, the hinging-pin D passing in through a hole in the said center plate in such a position that the outer ends of the jointed shaft C will have a free vertical movement to adapt the rollers to adjust themselves to uneven ground. The rollers B are kept from inward movement upon the shaft C by washers E and pins F attached to the said shaft upon the opposite sides of the center plate A. G are washers placed upon the shaft C between the outer ends of the rollers B and the inner sides of the end plates A. Upon the ends of the shaft C, at the outer sides of the end plates A, are placed washers H and nuts I, so that the plates A will be connected by the shaft C, that serves as journals to the rollers B.

J is the tongue, the rear end of which is forked to receive the forward part of the center plate A, and is hinged to the said plate by a bolt, K. Several holes are formed through the plate A to receive the bolt K, so that the point of draft attachment can be raised and lowered, as may be required. The tongue J is provided with a double-tree, L, and whiffletrees M in the ordinary manner. The tongue J is strengthened against side strain by braces N, the inner ends of which are secured to the opposite sides of the rear part of the said tongue by a bolt, O, and their outer ends are secured to the forward parts of the side plates A.

P is the driver's seat, which is attached to the upper arm of a U-shaped spring-standard, Q. The lower arm of the standard Q is bent to fit upon the curved upper edge of the center plate A, and is secured at its lower end to the said plate by a screw-bolt, R. The standard Q is held from lateral movement by a dowel-pin, S, attached to the said standard, and which enters a hole in the edge of the center plate A. Several holes may be formed in the edge of the center plate A, to receive the screw R and pin S, so that the seat P can be moved forward and back to cause the driver's weight to properly balance the machine.

To the forward corners of the plates A are pivoted small wheels T, the journals U of which are attached to the said plates A. Several holes are formed in the plates A to receive the journals U, so that the wheels T can be adjusted higher or lower, as may be desired. In bearings in the rear corners of the plates A is placed a shaft, V, which is secured in place by washers W and nuts X applied to its ends at

the outer sides of the side plates A. The shaft V is made in two parts, jointed to each other within the center plate A, the pivoting-pin Y passing in through a hole in the said center plate in such a position that the outer ends of the said shaft will have a free vertical movement to allow the machine to adapt itself to uneven ground. Upon the shaft V are placed a number of circular cutters, Z, which are kept at a proper distance from each other and from the plates A by tubular washers *a* placed upon the said shaft. The sides of the cutters Z are kept clean from adhering soil by scrapers *b*, the spring-shanks of which are curved forward and have square eyes formed in them to receive and fit upon the shaft *c*. In the rear of the cutters Z are placed the harrow or cultivator teeth *d*, the spring-shanks of which are made longer than the shanks of the scrapers *b*, are curved forward, and have square eyes in their ends to receive and fit upon the shaft *c*. The shanks of the scrapers *b* and teeth *d* alternate with each other and are kept at the proper distance apart by washers *e*, placed between them upon the said shaft. The shaft *c* is made square, is placed in bearings in the upper rear parts of the plates A, and is made in two parts jointed to each other within the center plate A, the pivoting-pin *f* entering a recess in the center plate A, passing through the joint of the shaft *c*, as shown in Fig. 3. The hole through the joint of the shaft *c* is made larger than the pin *f*, so that the said shaft *c* can have a sufficient rotary movement to raise the teeth *d* above the ground when required. To the parts of the shaft *c*, at the sides of the center plate A, are secured levers *g*, which project upward into such a position that they can be reached and operated by the driver with his hands or feet to raise the teeth *d* from the ground, and the scrapers *b* from the cutters. The teeth *d* and scrapers *b* are held in any position into which they may be adjusted by the toothed catch-plate *h*, with the teeth of which the levers *g* engage. The catch-plate *h* is placed upon the lower arm of the seat-standard Q, and is secured at its forward end by the screw R, that fastens the said seat-standard in place. The screw R is also used for securing the footboard *i* to the center plate A. Several holes are formed in the plates A to receive the shafts V *c*, so that the cutters Z and teeth *d* can be adjusted higher or lower, as may be required. With this construction, when the machine is drawn forward the rollers B crush the clods and smooth the ground, the cutters Z cut in pieces the sods, and the teeth *d* loosen and pulverize the soil. In case the machine is to be used for cultivating corn and other plants planted in rows or drills, the middle parts or sections of the rollers B can be removed, and the cutters Z and teeth *d* adjusted to work upon both sides of the rows of plants, so that two rows will be cultivated at each passage of the machine across the field.

I do not abandon or dedicate to the public any patentable features set forth herein and not hereinafter claimed, but reserve the right to claim the same either in a reissue of any patent that may be granted upon this application or in other applications for Letters Patent that I may make.

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

1. A combined land-roller, clod-crusher, and harrow, constructed substantially as herein shown and described, and consisting of three parallel plates connected by jointed-shafts, carrying rollers, circular cutters, cultivating-teeth, and scrapers, as set forth.

2. The plates A and the jointed shaft *c*, with each of its sections provided at their point of connection with an enlarged aperture, said sections being connected together by the pin *f*, and the shaft having the levers *g*, in combination with the teeth *d* and scrapers *b*, both connected to the common shaft *c*, substantially as and for the purpose set forth.

3. In a combined land-roller, clod-crusher, and harrow, the combination, with the three plates A, the rollers B, and the jointed shaft C, of the jointed shaft V and the circular cutters Z, substantially as herein shown and described, whereby the sods will be cut in pieces and crushed, as set forth.

4. In a combined land-roller, clod-crusher, and harrow, the combination, with the three plates A, the rollers B, the cutters Z, and the jointed shafts C V, of the scrapers *b* and the jointed shaft *c*, substantially as herein shown and described.

5. In a combined land-roller, clod-crusher, and harrow, the combination, with the three plates A, the rollers B, the cutters Z, and the jointed shafts C V, of the cultivating-teeth *d* and the jointed shaft *c*, substantially as herein shown and described, whereby the ground will be smoothed, the sods cut in pieces, and the soil pulverized, as set forth.

ANDREW HELMAN.

Witnesses:
C. M. WOOD,
A. CAUFMAN.