

No. 627,182.

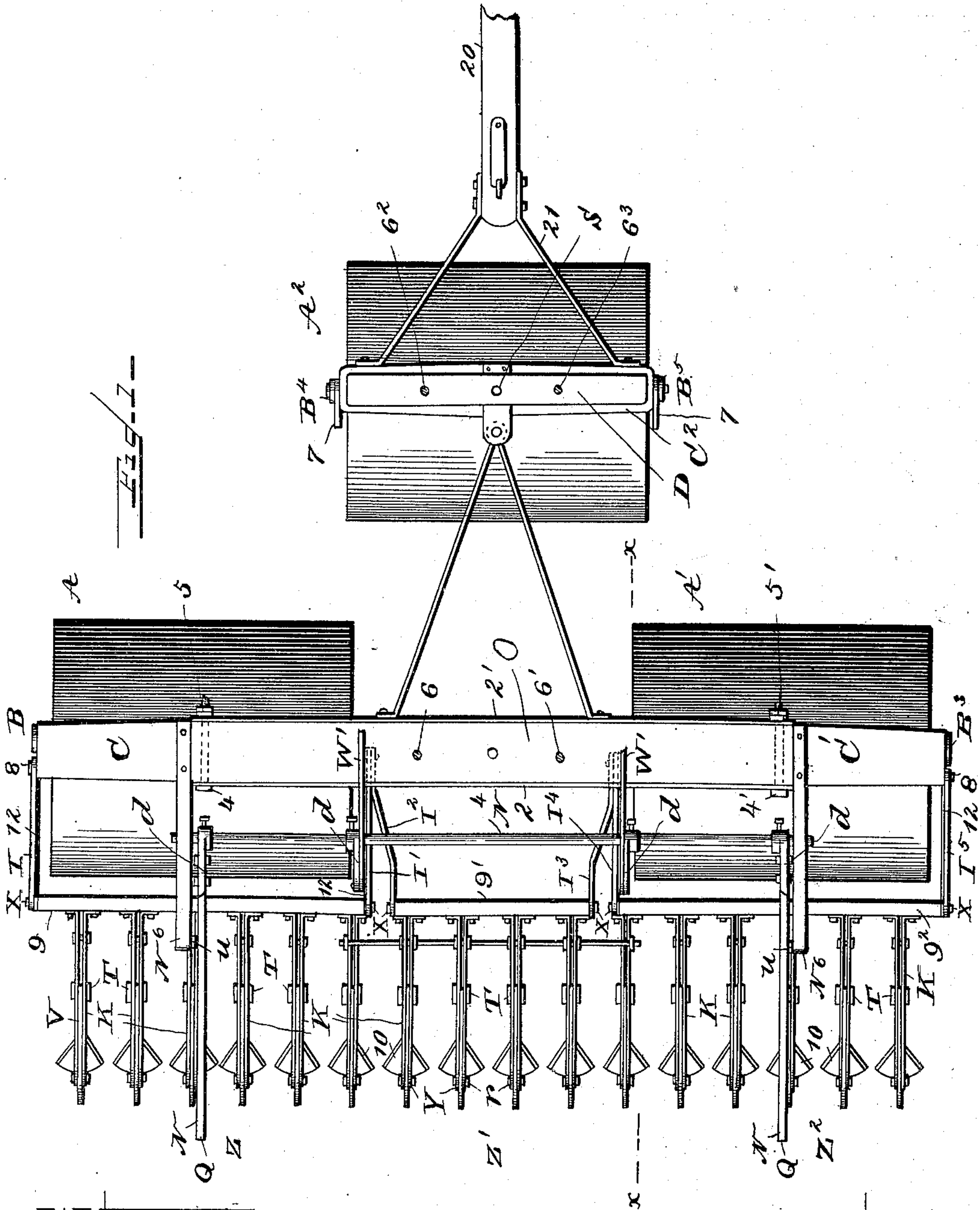
Patented June 20, 1899.

W. C. FREEMAN.
COMBINED LAND ROLLER AND MULCHER.

(Application filed Mar. 14, 1898.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses

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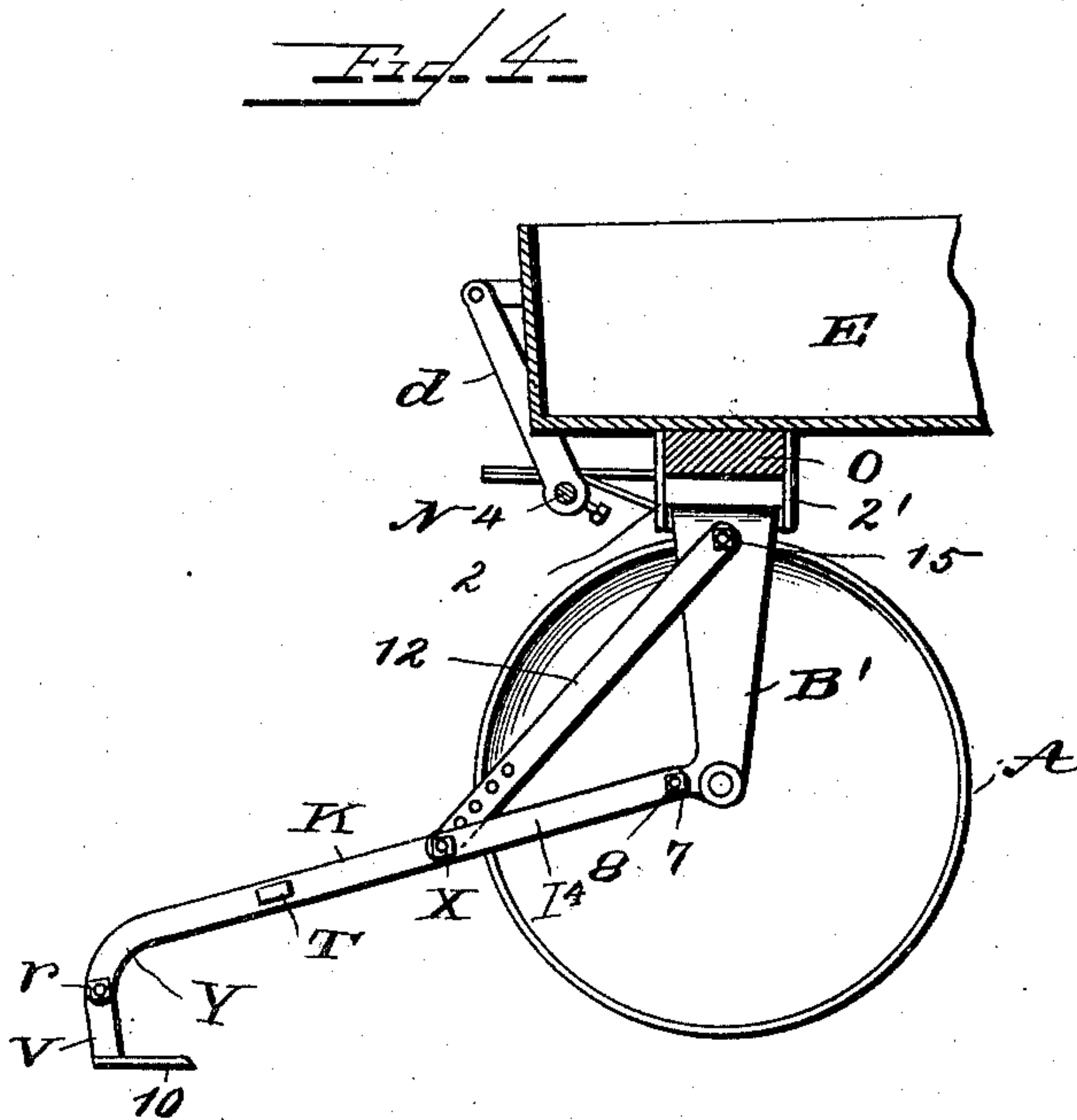
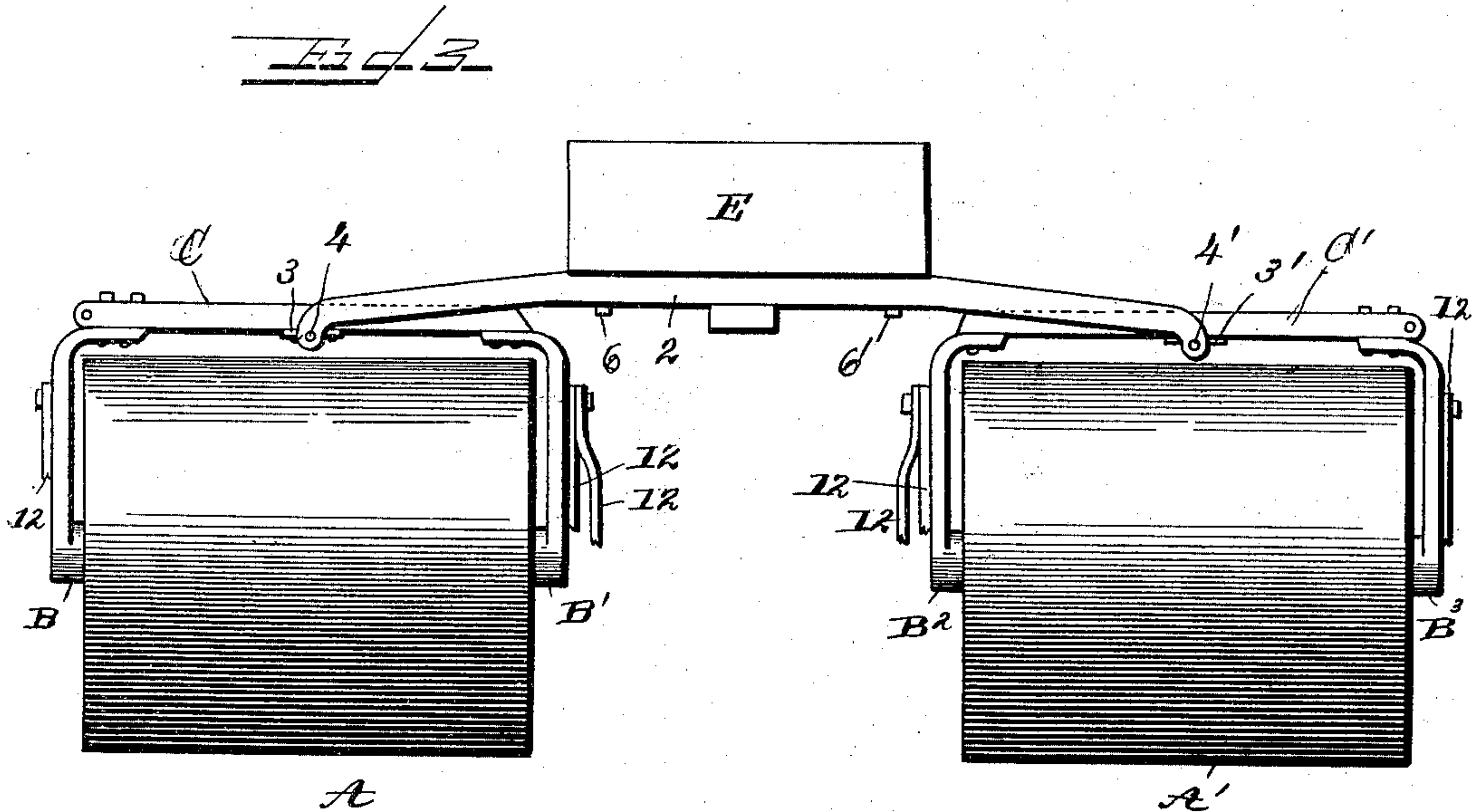
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WITNESSES—

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UNITED STATES PATENT OFFICE.

WILLIAM C. FREEMAN, OF KALKASKA, MICHIGAN.

COMBINED LAND ROLLER AND MULCHER.

SPECIFICATION forming part of Letters Patent No. 627,182, dated June 20, 1899.

Application filed March 14, 1898. Serial No. 673,721. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM C. FREEMAN, a citizen of the United States, residing at Kalkaska, in the county of Kalkaska and State of Michigan, have invented certain new and useful Improvements in a Combined Land Roller and Mulcher; 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.

The object of this invention is to more evenly and thoroughly roll farm land and at the same time mulch or loosen the surface of the same, thereby preventing the escape of the soil moisture, and cultivate as well.

In the construction of this roller the several rolls are attached to a framework having suitable hinged joints whereby each roll may lie easily upon the ground without cramping its relation to the other rolls.

In describing my invention reference is made to the accompanying drawings, forming a part of this specification, in which like letters and figures indicate corresponding parts in the several views.

Figure 1 is a plan view with the bed removed. Fig. 2 is a side elevation. Fig. 3 is a rear view of the rolls and frame. Fig. 4 is a section on the line X X, Fig. 1. Fig. 5 is a perspective view of one of the draft-bars with the mulching-tool thrown out of operative position. Fig. 6 is a cross-section of the same on the line y y, showing the head of the mulching-tool between the bars. Fig. 7 is a detail view of the ratchet-bars 11 and N.

In Fig. 1 are shown three rolls A A' A², set in triangular position to each other and at such suitable distance from each other that the front roll may turn on its center without striking the rear roll. These rolls are journaled in trunnions at the lower ends of bracket-bearings B B' B² B³ B⁴ B⁵, which are securely bolted to cross-frames C C' C² and provided with rearwardly-extending integral perforated lugs 7. The front bolster D is secured to front cross-frame C² by ball-and-socket bolt S, which also secures front end of bed E to bolster D. The rear bolster O is se-

cured between truss-bars 2 2', which are of proper length to reach from center of cross-frame C to center of cross-frame C' and are securely bolted through bolster O; as well as through lug-plates 3 3', by means of bolts 4 4', which bolts are secured loosely by means of jam-nuts 5 5', thus allowing the cross-frames C C', with the rollers they carry, to vibrate loosely upon hinged joints, permitting the rollers A A' to adjust themselves to any unevenness of the ground surface and to guide them as well.

Bed E is securely bolted to front and rear bolster by means of nut-bolts 6 6' 6² 6³.

The rear brackets B B' B² B³ are provided with rearwardly-projecting lugs 7, perforated for bolts 8, by which the forward end of a series of draft-bars I, I', I², I³, I⁴, and I⁵ are bolted to said lugs 7. The rear ends of said draft-bars, as shown in Fig. 2, are also loosely bolted to the ends of cross-bars 9, 9', and 9² by the bolts X, thus permitting either section of the mulchers Z Z' Z² to be raised and lowered independently of the others.

In addition to the six draft-bars I I' I² I³ I⁴ I⁵ there are a series of curved bars K, (more clearly shown in Fig. 2,) the forward ends of which are bent and riveted or bolted in pairs to the rear side of the cross-bar 9, 9', or 9². The rear ends of the draft-bars K are curved down, as shown at Y, Fig. 2, and have bolt-holes in the curved end at r. Said draft-bars also have grooves made lengthwise in their inner face at T of such construction that when the bars are bolted together said grooves form a V-shaped groove for the reception and retention of the wedge-shaped heads m, formed on the forward curved end of the mulcher-head V, the operation of which is such that when the corners of the wedge-shaped heads m are properly entered into the V-shaped groove T and the tension-bolts g have been drawn tight upon the sides of draft-bars K they tend to hold the heads m quite firmly in place and with sufficient force to carry the mulching-tool against the cut in the soil.

In the event of a mulching-tool striking some obstacle that will not yield then the head m will be forced out from between the draft-bars K by the greater force brought to be bear upon it, letting the mulching-tool rise out of the ground without damage to said

tool. To regulate the grip of the draft-bars K upon the heads *m*, tension-bolts *g* are put through each pair of draft-bars K. By tightening or loosening the nuts on these bolts the desired tension may be had upon the heads *m* to insure the required firmness of the mulching-tools 10 against the cut in the soil.

In design the lower points of the mulching-tools are very thin vertically, with flat surfaces, having a helve V, as shown in Fig. 2, very thin laterally, but quite wide in the direction of its movement. The object of this shape is the accomplishment of an easy draft and that they will cut a wide thin kerf, raising the soil but little, and having a thin helve laterally they will cast the soil loosened up but slightly to either side, the great aim being to loosen up the surface of the soil with the smallest outlay of power possible and at the same time leave the mulched soil evenly spread. Two or more of the bolts *g* are made of proper length to receive in addition to the draft-bars K the lower end of link *u*, one end of which is pivoted to the lifting-lever N, whereby the mulching-tools may be drawn out of or lowered into the ground. This may be done by the attendant taking hold of the lever N at Q, Fig. 2, and raising upward. The mulching-tools may also be raised and lowered by means of the lever W and link W', connected to the arm *d*, holding the lever W forward in the direction of the arrow 16 and lodging the lip L on arm W in the catches on the inner side of ratchet-bar 11, the toothed side of the bar not being shown. (See Fig. 2.)

N³ are brackets secured to the respective cross-frames C C' and perforated to receive a rod N⁴, on which the levers N are secured. The arm *d* is also rigidly secured to the rod N⁴ to one side of the body E.

The desired depth of the mulching-tool may be regulated by changing bolt X into a higher or lower hole of the multipierced link 12, (see Fig. 2,) the other end of said link being pivoted to the bracket B³ by means of the bolt 15.

The bars N⁶ are secured, respectively, to the cross-frames C C' and provided at their rear ends with a depending ratchet-bar N⁷, (the ratchet-teeth not being shown,) which is adapted to be engaged by a lug or tooth on the lifting levers or handles N, whereby the mulching-tools may be raised and held in such elevated position independent of the lever W.

The purpose of the bed E is to load the roller to the desired weight. By filling the same with dirt or stone either light or heavy rolling may be done.

Tongue 20 in Fig. 1 is of the usual design, except that the iron brace-rods 21 are slightly longer than usual, extending to the outer ends of the cross-frame C², it being purposely designed in this manner the better to change said land-roller from a three-roll to a two-roller machine, thereby better adapting said land-roller to the cultivation of corn or other

crops planted in rows. This change is made by separating roller A², together with cross-frame C², bed E, truss-bars 2 2', and center section of mulcher Z' from cross-frame C C' by loosening bolts 4 4', bringing rollers A A', with their remaining attachments, sufficiently close that the holes in the cross-frame C C' will member with the holes in the outer ends of the brace-rods 21, thus bringing rollers A A', together with the mulching attachments Z Z', to the desired distance apart to stride the rows without rolling upon the plants to be cultivated. After the holes in the cross-frames C C' are brought fair with the holes in the outer ends of the brace-rods 21 bolts 4 and 4' are entered in and secured loosely by the jam-nuts 5 and 5', when the two-roll land-roller will be ready for use in both rolling and mulching the soil, as herein specified.

What I claim, and desire to secure by Letters Patent, is—

1. In a machine of the character described, the combination with the rollers, of cross-frames provided with depending brackets carrying trunnions for said rollers, lugs secured to said cross-frames and truss-bars loosely bolted to said lugs, at their respective ends.

2. In a machine of the character described, the combination with the bed, of a truss secured to the bottom of the same, U-shaped frames pivotally and detachably secured to the end of said truss, trunnions secured to the lower ends of said frames, and rollers secured in said trunnions.

3. In a machine of the character described, the mulching attachment built up in independent sections comprising long draft-bars, short draft-bars, loosely mounted on a rod in pairs, mulching-tools secured between the outer ends of said short bars, and means for adjusting, and means for raising and lowering the attachment, substantially as described.

4. In a machine of the character described, the combination with the rollers, and sectional mulching attachment, of a rod connected to said rollers and extending across the same, levers secured to said rod, and links connecting said levers with the mulching attachments, and means connected to said rod for operating said levers, substantially as described.

5. In a machine of the character described, the combination with the rollers, of cross-frames provided with depending brackets carrying trunnions for the rollers, lugs secured to said cross-frames, truss-bars loosely bolted to said lugs at their ends, and a mulching attachment connected with said rollers by draft-bars, an adjusting-link secured to the depending brackets and draft-bars to regulate the depth of the cut of the mulching attachment, substantially as described.

6. A combined land roller and mulcher, comprising two rear rollers secured together at a distance apart, a pivoted front or guiding roller secured some distance in front of the rear rollers and to travel in the path between

the rear rollers, a sectional mulching attachment secured to the rear rollers, means for adjusting and means for elevating and lowering the same and a weighted body detachably
5 secured to the three named rollers, substantially as described.

7. The combination with parallel draft-bars, a mulching-tool pivoted between the ends of said bars, of means formed with the parallel
10 bars and mulching-tool and coacting to normally lock the tool against rotation.

8. In combination with parallel draft-bars, a locking medium formed in said bars, a mulching-tool pivoted between said bars and
15 a head on the upper end of said tool adapted to be engaged by the locking medium on said

bars to secure the tool normally against rotation, substantially as described.

9. In combination with parallel draft-bars, a groove formed in each of said bars, a mulch- 20
ing-tool pivoted between the ends of said bars, a wedge-shaped head formed on the upper end of said tool adapted to be locked in said grooves, thereby securing said tool, normally,
25 against rotation, substantially as described.

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

WILLIAM C. FREEMAN.

Witnesses:

JOHN W. PARSONS,
M. J. HENPURLY.