No. 656,618. Patented Aug. 21, 1900.

A. W. ACKER.

LAND ROLLER.

(Application filed Sept. 25, 1899.)

(No Model.) 2 Sheets—Sheet 1.

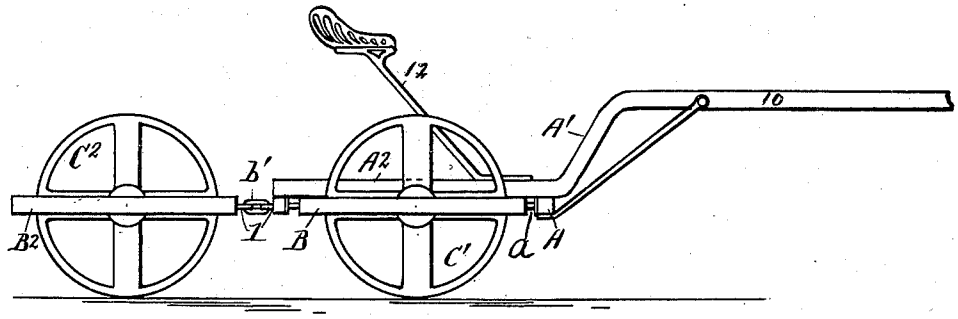


Fig. 1.

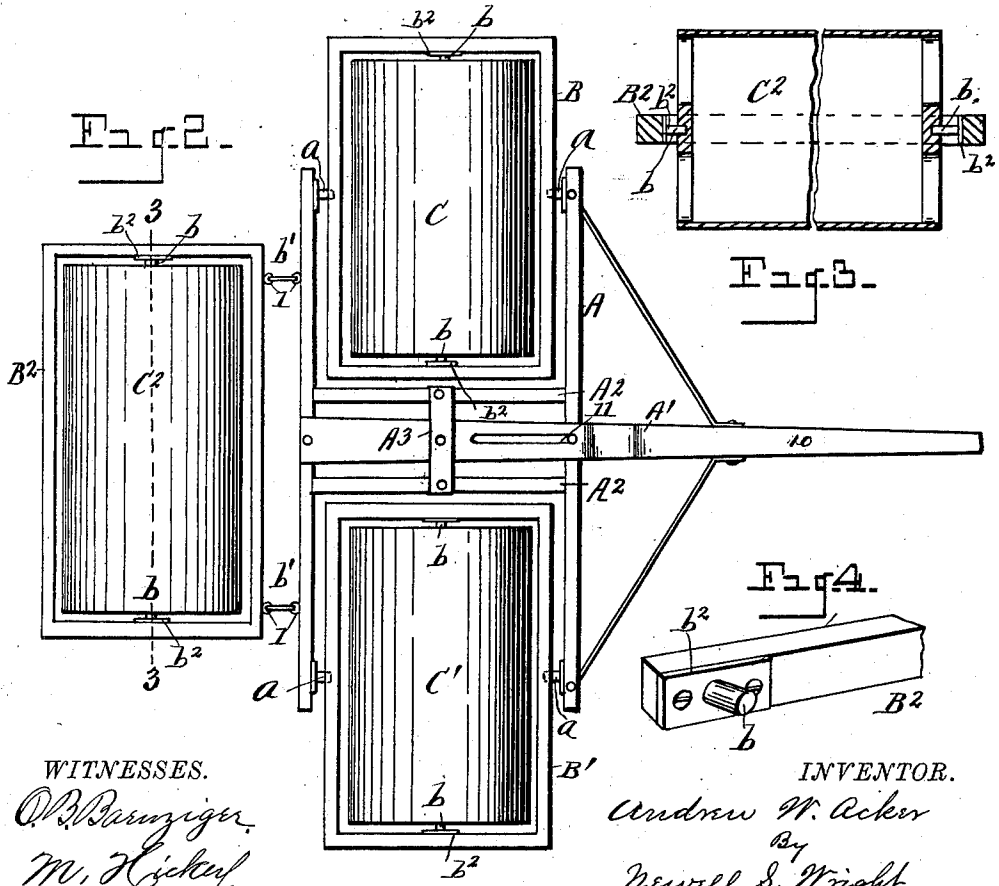


Fig. 2.

Fig. 3.

Fig. 4.

WITNESSES.

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Fig. 7.

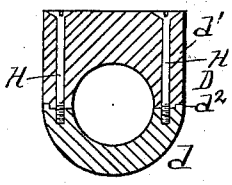


Fig. 8.

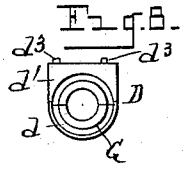


Fig. 6.

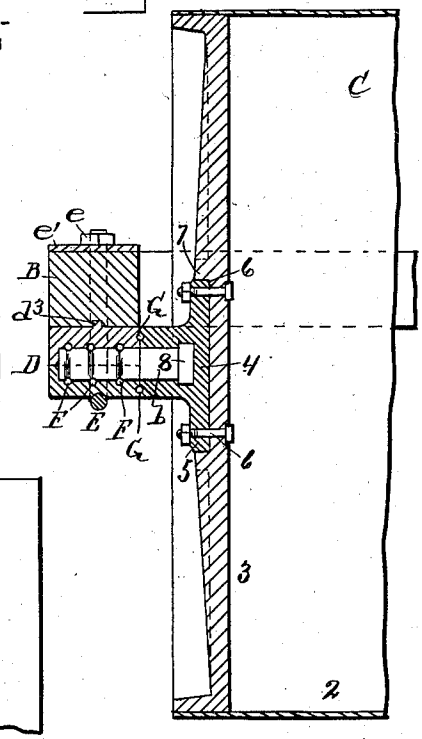


Fig. 9.

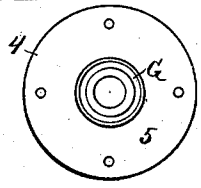
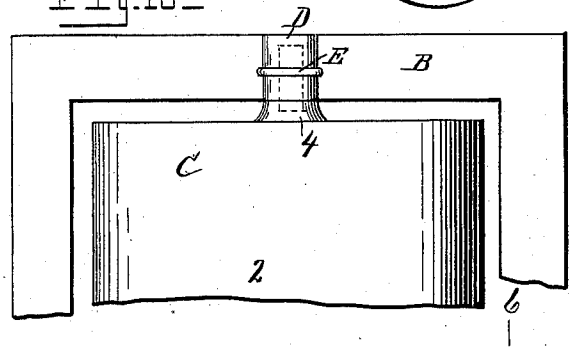


Fig. 10.



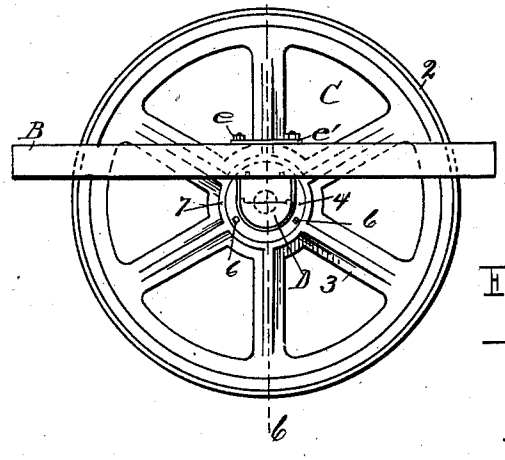


Fig. 5.

Witnesses
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UNITED STATES PATENT OFFICE.

ANDREW W. ACKER, OF LANSING, MICHIGAN.

LAND-ROLLER.

SPECIFICATION forming part of Letters Patent No. 656,618, dated August 21, 1900.

Application filed September 25, 1899. Serial No. 731,549. (No model.)

To all whom it may concern:

Be it known that I, ANDREW W. ACKER, a citizen of the United States, residing at Lansing, county of Ingham, State of Michigan, have invented a certain new and useful Improvement in Land-Rollers; and I 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, which form a part of this specification.

My invention is designed to provide certain new and useful improvements in a land-roller; and it consists of the construction, combination, and arrangement of devices hereinafter specified and claimed, and illustrated in the accompanying drawings, in which—

Figure 1 is an end elevation. Fig. 2 is a plan view. Fig. 3 is a horizontal section on the line 3 3, Fig. 2. Fig. 4 is a detail view. Fig. 5 is an end view illustrating a modification of my invention. Fig. 6 is a vertical section on the line 6 6, Fig. 5. Fig. 7 is a detail view of one of the bearings in vertical section. Fig. 8 is an end view of one of the bearings. Fig. 9 is an end view of the hub and axle shown Fig. 6. Fig. 10 is an inverted plan of the invention shown in Figs. 5 and 6.

I carry out my invention as follows:

A represents a main frame to which the tongue A′ is connected in any suitable manner. The main frame is provided with connecting-braces A^2, which braces are united by a bar A^3, said bar also being engaged with the tongue in any suitable manner. The front and rear portions of the main frame are constructed to receive two roller-frames B and B′, which may be rectangular. These roller-frames are pivotally supported intermediate of their extremities upon the adjacent extremities of the main frame in any suitable manner, as by supporting-pivots *a*, which may be secured to the extremities of the frame A, the roller-frames being socketed, as indicated, to receive said pivots. The roller-frames B B′ are provided with any suitable rollers C C′. These rollers are supported upon axles *b*, which may be engaged in any suitable manner with the ends of the roller-frames and with the ends of the corresponding rollers. To the rear of the main frame I also contemplate locating an additional frame B^2 to support an additional roller C^2, said roller C^2 being supported upon axles *b*. The rear frame B^2 is connected with the rear portion of the main frame in any suitable manner, as by eyes 1, entering the respective frames, said eyes being connected by a link, as indicated at *b*′. It will be perceived by reference to Fig. 2 that the adjacent extremities of the rollers C C′ are spaced quite a little distance the one from the other by the intervening connecting-bar A^2 and other portions of the mechanism. The drag-roller C^2, however, is so located as to cover said space between the rollers C C′ in the operation of the device.

It will be perceived that the construction above described permits the roller-frames B B′, supporting the rollers C C′, to tilt longitudinally of the machine upon the pivot *a*, so that either extremity of each of the rollers C C′ is free to tilt to conform to any unevenness of ground, as either end of said rollers is free to tilt upward or downward, as circumstances may require, so that the rollers may tilt into furrows and also over stones or other impediments in the way. The drag-roller C^2 is also free to rock and tilt vertically and longitudinally to a suitable extent by means of the connection of the frame B^2 with the main frame A. The rollers may be made of any suitable material. In Figs. 5 and 6 one of the rollers is shown having its cylinder or drum formed of suitable sheet metal, (indicated by the numeral 2,) suitably secured at its extremities upon a head 3. To each of these heads I prefer to secure a removable hub 4, in which the corresponding axle is secured. The hub may be constructed with a flanged head, (indicated at 5,) which may be bolted to the head 3, as indicated at 6. The head 3 is preferably recessed to receive the head of the hub, as shown, the head being formed with a shoulder surrounding the head of the hub, as indicated at 7. This shoulder about the head of the hub strengthens the union of the one with the other. The axles *b* may be constructed with a flanged end or head (indicated at 8) engaged in corresponding recesses in the hub. I prefer to locate the axles in the sand in casting the hub and to cast the hub about one end of the axle. The axles may each be engaged with the cor-

responding frames by means of boxes D, preferably formed of lower and upper portions d and d', rabbeted together, as indicated at d^2, Fig. 7. The boxes may be engaged with the corresponding extremities of the frames by means of a clip e, passing thereabout and through the frame and secured therein by means of nuts e, a plate e' intervening between the nut and the frame. To resist torsional strain, the upper portion of the box is preferably constructed with lugs (indicated at d^3) to enter the adjacent surface of the frame.

Each axle and its box or bearing D is provided with ball-bearings, (indicated in Fig. 6 at F.) To this end the plates of each of the bearings are preferably constructed with annular recesses intermediate of their ends, as shown in Fig. 6, to receive the balls, the periphery of the axles being also preferably recessed, as shown, to engage with the corresponding ball. I also design that the end face of the hub and the adjacent end face of the corresponding bearing shall be grooved, as indicated at G, to receive corresponding balls therebetween. In this manner a double ball-bearing is provided—a ball-bearing for the adjacent faces of the hub and bearing and for the axle and the bearing. The two portions of the bearing may be held together also by means of a suitable screw H.

The tongue 10 is preferably constructed with an elongated slot 11 to permit the longitudinal adjustment of the seat 12 thereupon, so as to throw the weight of the rider forward or rearward, as may be required.

It is evident that by making the hub detachable from the head of the roller should the hub and the axle become worn it can readily be removed and replaced. The axles b may be formed, however, with a bracket or plate b^2, as shown in Fig. 4, which plate may be secured to the adjacent frame, the axle being journaled in the roller in any desired way. The pivot a may be constructed also in an analogous manner. A roller so constructed is obviously of superior advantage and efficiency.

What I claim as my invention is—

1. In a roller, the combination of a roller-frame, a roller provided with a head; a hub provided with an axle projecting therefrom removably engaged with said head, and a bearing formed of a lower and an upper portion to receive the opposite end of the axle, screws to unite said portions, and a clip to secure said bearing underneath the adjacent extremity of said frame, the head of the roller recessed to receive the adjacent end of the hub and provided with a flange or shoulder about the adjacent end of the hub, substantially as set forth.

2. In a roller, the combination of a roller-frame, a roller provided with a recessed head, a hub and its axle removably engaged with said recessed head, a bearing for the opposite end of the axle formed of a lower and an upper portion, screws passing through the upper portion into the lower portion to unite said portions, a clip to engage the bearing underneath the adjacent extremity of the frame, ball-bearings located intermediate of the ends of the bearing about the adjacent end of the axle, and additional ball-bearings between the end face of the hub and the adjacent end face of the bearing, as set forth.

In testimony whereof I sign this specification in the presence of two witnesses.

ANDREW W. ACKER.

Witnesses:

WM. L. HERMES,

R. G. BROWNSON.