(No Model.)

# F. B. HARVEY.

## ROLLER AND HARROW.

No. 430,016. Patented June 10, 1890.

Fig. 1.

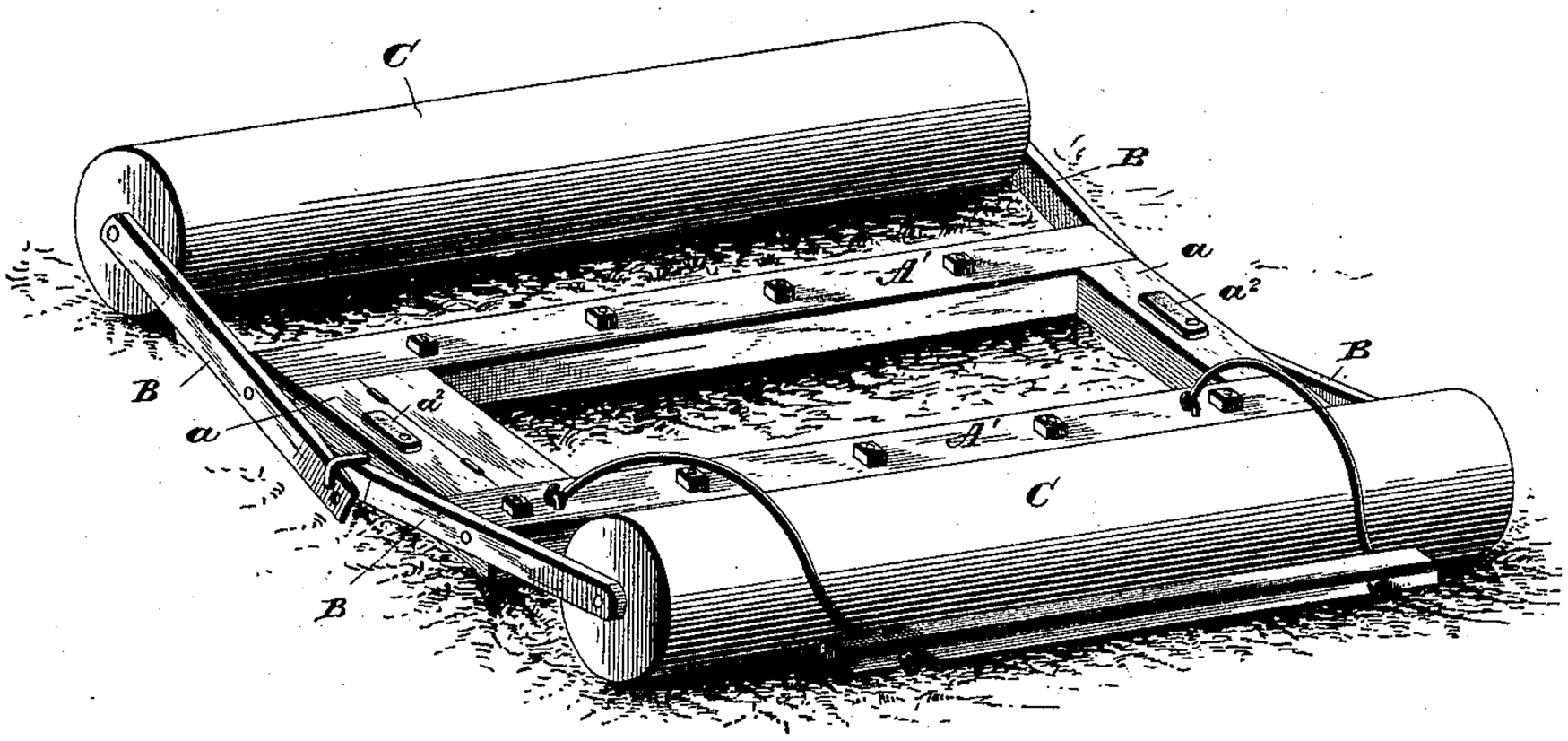



Fig. 2.

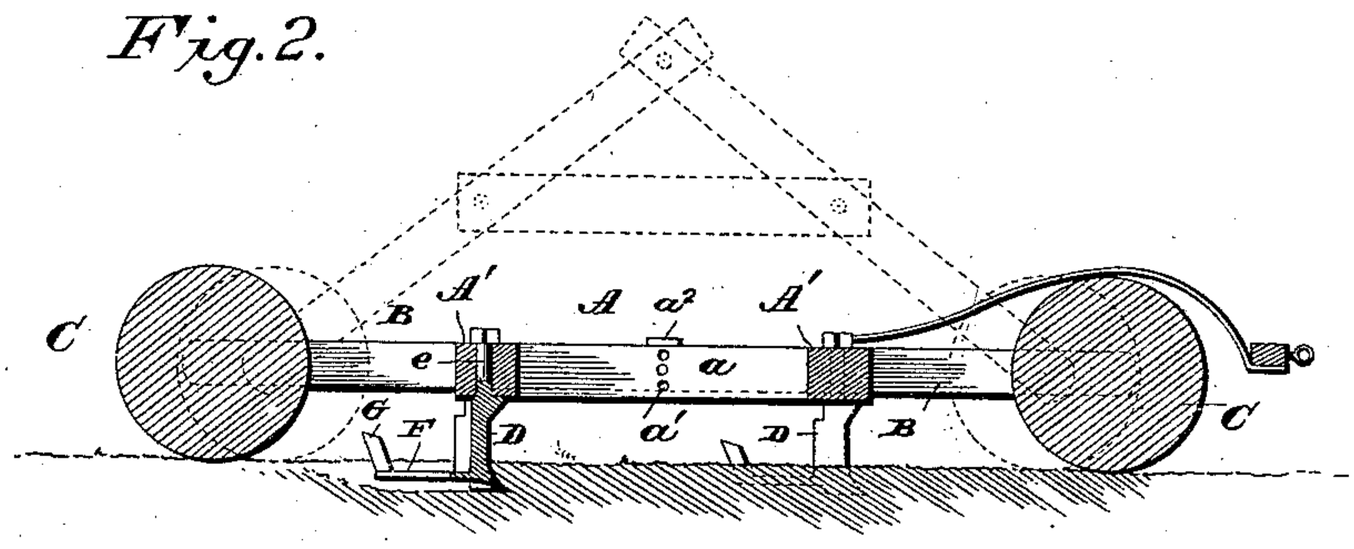



Fig. 3.

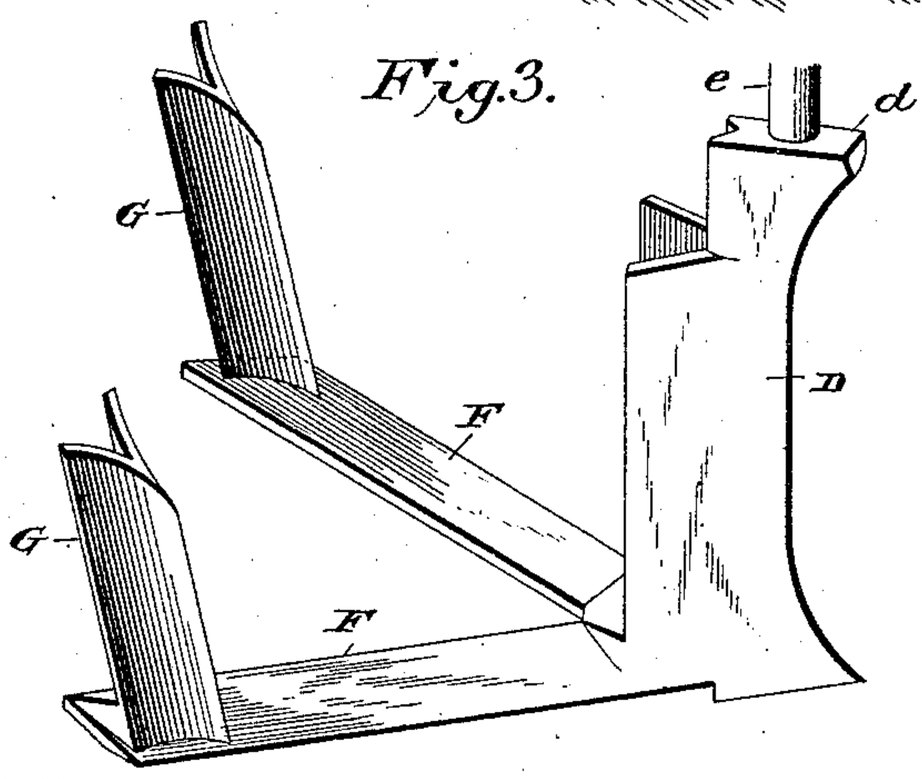
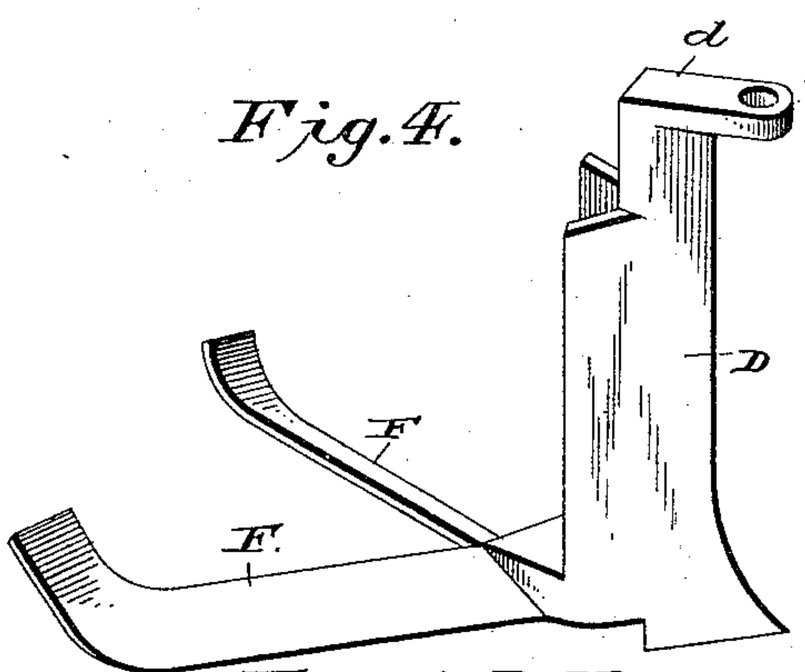



Fig. 4.




Witnesses
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# UNITED STATES PATENT OFFICE.

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## ROLLER AND HARROW.

SPECIFICATION forming part of Letters Patent No. 430,016, dated June 10, 1890.

Application filed March 1, 1890. Serial No. 342,305. (No model.)

*To all whom it may concern:*

Be it known that I, FRANCIS B. HARVEY, a citizen of the United States of America, residing at Charlestown, in the county of Chester and State of Pennsylvania, have invented certain new and useful Improvements in Rollers and Harrows; and I do hereby 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 letters of reference marked thereon, which form a part of this specification.

This invention relates to that class of rollers and harrows in which the front and rear rollers are secured to the frame by levers, so that said rollers will act in conjunction with the harrow-teeth, and not only be utilized for pulverizing the soil, but also regulate the depth that the harrow-teeth will enter the ground, said rollers also serving as a means for transporting the machine without permitting the teeth to come in contact with the ground.

The invention consists in providing the harrow-frame with longitudinal side levers or arms, the short ends of which are adjustably connected to the harrow-frame, so that the relative position of the rollers may be varied and the weight of said rollers thrown to a great extent upon the harrow-frame.

The invention further consists in the construction of the harrow-teeth, and in the construction and combination of the parts, as will be hereinafter set forth.

In the accompanying drawings, Figure 1 is a perspective view of a combined roller and harrow constructed in accordance with my invention. Fig. 2 is a vertical section showing the rollers in one position in full lines and in another position in dotted lines, so that said rollers will hold the harrow-frame above the surface of the ground. Fig. 3 is a detail perspective view of one of the harrow-teeth detached, and Fig. 4 is a modification thereof.

A refers to the rectangular harrow-frame, which preferably consists of extended transverse beams A′ and end connecting-beams *a*. The transverse beams carry the harrow-teeth, which may be of ordinary construction.

To the ends of the harrow-frame A are pivoted levers or arms B B, the short ends of which are oppositely beveled and provided with perforations or openings through which pass suitable connecting means or clamping devices for attaching the short ends to each other when they are elevated. To the long ends of the arms or levers B are pivotally secured rollers C, which are of ordinary construction—that is to say, in one piece, or they may be made up of several sections and mounted on a shaft. The rollers C C are practically of the same length as the longitudinal beams A′ of the harrow-frame.

The end pieces *a* of the harrow-frame are provided with a vertical series of perforations *a′*, into which suitable bent pins or clamping devices may be secured, so that the upper edges of the short ends of the levers will abut against said pins to hold the levers B at an upward inclination to cause a part of the weight of the rollers to come upon the harrow-frame. The upper edges of the beams *a* are also provided with turn-buttons $a^2$, which, when turned to project beyond the beams, will contact with the upper edges of the levers B and prevent the upward movement thereof.

When it is desired to use the device merely as a roller or in transporting it from place to place, the short ends of the levers B can be elevated and secured together, and when so secured will hold the harrow-frame raised above the center of the rollers and out of contact with the ground.

The harrow-frame may be provided with a suitable tool-box, as shown.

The draft attachment may consist of a bar of metal, the ends of which are secured to the front longitudinal beam of the harrow-frame, from which said bar is curved to extend over the front roller, and the horizontal connecting-bar can have a singletree or draft-pole suitably coupled thereto.

With my improved roller and harrow I desire to use harrow-teeth or cultivators which are pivotally secured at suitable distances from each other to the transverse beams A′ of the harrow-frame, and for this purpose the said beams are provided with perforations for receiving the pivots or pivot-bolts of the har-

row-teeth, which extend through the beams and are secured in place by nuts.

The harrow-teeth shown in Figs. 3 and 4 of the drawings each consist of a standard D, the front edge of which is curved, as shown, while the sides diverge, and at the upper end of this standard is formed a head *d*, through which passes the pivot-bolt *e;* or this pivot-bolt may be formed integral with the standard, as shown in Fig. 3. The lower end of the standard at its point is provided with a beveled portion, whereby it is rendered self-sharpening as the metal forming the same wears away, and from the heel of this standard extend two diverging wings F F, which incline from their rear upper edges downwardly, and the ends of these rearwardly projecting and diverging wings may be bent upwardly to better turn or agitate the earth; or they may carry rearwardly and upwardly inclined members G, which are so constructed as to have concave portions between their front and rear edges, which will serve to spread the soil, acting after the manner of the mold-board of a plow.

The form of tooth hereinbefore described being pivoted to the harrow-frame is adapted to swing laterally upon its pivot, so that should either of the lateral projecting portions of the teeth strike against an obstruction it will move the tooth upon the pivot to one side, and so pass the obstruction without liability of breaking.

In practice I prefer to attach the harrow-teeth, as shown in Fig. 4, adjacent to the ends of the rear transverse beam of the harrow, while the other form (shown in Fig. 3) is applied upon the front beam and to the central portion of the rear beam.

The harrow-frame may be provided with a driver's seat.

I claim—

1. In a harrow and roller, the combination of a harrow-frame, longitudinal bars or levers outside of the same and pivoted thereto, and rollers secured to the outer ends of said levers, substantially as set forth.

2. In a combined roller and harrow, a rectangular harrow-frame, longitudinal levers pivoted to the sides thereof, so that the short ends will overlap each other, and rollers pivotally secured to the outer ends of said levers, substantially as set forth.

3. In a harrow and roller, the combination of the front and rear rollers, central rectangular harrow-frame, longitudinal levers B B, pivoted to the sides of the harrow-frame and provided with end overlapping portions, means for adjusting the short ends of the levers, so that the position of the harrow-frame may be varied with respect to the rollers, and a draft-bail secured to the harrow-frame to extend over the front roller, the parts being organized substantially as shown, and for the purpose set forth.

4. In a combined roller and harrow, the combination of the front and rear rollers pivotally secured by levers B B to the ends of a central rectangular harrow-frame, the short ends of the levers being beveled, bent pins adapted to enter perforations in the harrow-frame, so that the levers will engage therewith, and turn-buttons carried by the harrow-frame for limiting the movement of the levers, substantially as set forth.

5. In combination with a harrow-frame, a series of teeth pivoted thereto so as to turn laterally upon their pivots, said teeth having vertical converging portions, rearwardly diverging wings, and upturned portions adjacent to the rear end of said wings, substantially as set forth.

6. A tooth for harrow-frames having a front standard comprising vertical converging portions, means for pivoting said standard so that it can move laterally in the harrow-frame, said standard having rearwardly-diverging portions or wings and upwardly and rearwardly inclined end members which are curved to throw the earth to one side, substantially as set forth.

7. In combination with a harrow-tooth, a standard comprising vertical converging portions and having the front lower portion curved and extended below the heel of said standard, the under side of the front portion of the standard being inclined or beveled, so that it will be self-sharpening, substantially as shown, and for the purpose set forth.

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

FRANCIS B. HARVEY.

Witnesses:
E. W. JOHNSON,
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