

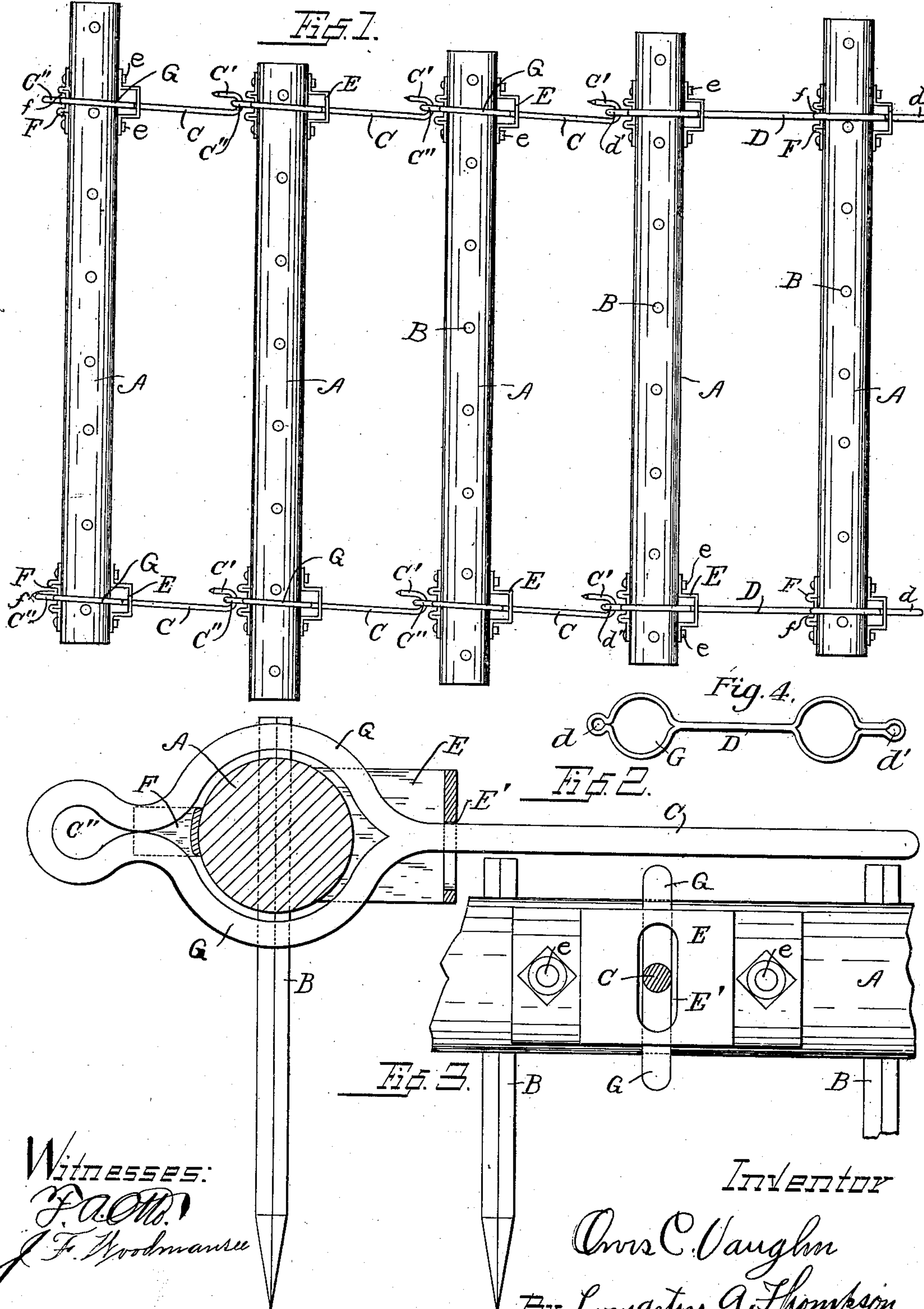
No. 742,531.

PATENTED OCT. 27, 1903.

O. C. VAUGHN.  
HARROW.

APPLICATION FILED DEC. 12, 1902.

NO MODEL.



Witnesses:

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# UNITED STATES PATENT OFFICE.

ORVIS CURTIS VAUGHN, OF CHICAGO, ILLINOIS.

## HARROW.

SPECIFICATION forming part of Letters Patent No. 742,531, dated October 27, 1903.

Application filed December 12, 1902. Serial No. 134,956. (No model.)

*To all whom it may concern:*

Be it known that I, ORVIS CURTIS VAUGHN, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Harrows; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention has for its object to provide a harrow that combines flexibility, simplicity, and economy of construction with durability and efficiency; and it consists of the following described construction.

Figure 1 of the drawings shows a top view of a section of my harrow. Fig. 2 shows an end view of one rail of a section of the harrow with parts attached. Fig. 3 shows a fragment of a rail of a section with adjusting devices in place, and Fig. 4 is a side elevation of one of the links.

My harrow may consist of one or more sections, each section consisting of a plurality of rails A and each rail holding a plurality of teeth B. The rails are preferably cylindrical in form and constructed of wood or metal. The teeth may be inserted in the rails in a manner so that they do not register in path of travel of the preceding teeth. The object of connecting the rails together at their respective ends is accomplished by means of links C, the latter for economy of construction and durability being preferably hand-forged from one piece of steel. The link C is bent so as to form a ring G, through which the end of rail A is inserted, as shown in Fig. 2, and a loop C'' at one end and a hook C' at the other end, the hook C' of one link being adapted to engage the loop C'' of another link.

Secured to the two opposite sides of the rails A by means of bolts e are clips E and F. The clip E is formed of one piece of metal having ends in curved form fitting on the rail and a raised central portion wherein is an elongated vertical opening E', through which the link C passes, and the said latter clip serves to limit the link C in lateral motion and at the same time to limit its vertical motion. The clip F, which is secured to the opposite side of the rail, is also made of one piece of metal bent so as to form two lugs, leaving a central groove f, into which the link C is inserted, the two lugs on the

two sides limiting the lateral motion of the link. By this construction the connecting device does not interfere with the location of the teeth in the rail, as the teeth may be inserted along the rail at any point, the teeth being entirely separated from the connecting device.

One of the advantages of my harrow is that it adjusts itself to different angles when hauled from different ends, it being necessary with my construction to form the last link D on one end of the harrow of a solid piece of metal, so that the last link has a loop d' at its inner end and a loop d at its outer end and a ring G for the rails at both ends, as shown in Fig. 4. This arrangement is necessary in order to properly adjust the angle of the teeth in the last rail.

Another advantage found in my device is that one section of a harrow may be used to an advantage or the entire harrow may be extended to cover great space of ground laterally by securing my connecting device at varying distances from the ends of the rails, as shown in Fig. 1 of the drawings.

It will be seen that the harrow when hauled from one end will give the teeth a vertical position and that when hauled from the other end permits the teeth to incline away from the direction of the motion and being made flexible by the use of the hook-coupling will adjust itself to uneven ground and free itself from obstruction.

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

1. In combination in a harrow, a tooth-holding rail, a rail adjusting and connecting device, consisting of a link formed from one piece of metal and having a ring and a loop at one end, and a hook at the other end, two clips, means for securing said clips to a rail, one of said clips limiting both the vertical and lateral motion of said link, and the other limiting its lateral motion, substantially as set forth.

2. In combination in a harrow, a tooth-holding rail, a link adapted to fit loosely around said rail, having a loop at one end and a hook at the other end, two clips, one of which is bent upon itself, forming lugs, the other having curved ends fitting on the rail and having a raised central portion, and an oblong

vertical opening in said central portion, means for securing said clips to a rail so as to limit the vertical and lateral motion of said link, substantially as set forth.

5 3. In combination in a harrow, a rail adjusting and connecting device comprising a link bent upon itself, forming a ring, a loop and a hook, a tooth-holding rail, clips secured to the latter for engagement with said link, limiting the vertical and preventing the lateral  
10 motion of the latter, substantially as set forth.

4. In combination in a harrow, a tooth-holding rail, a link formed with a loop at one end and a hook at the other end, and a ring near  
15 said loop fitting loosely over said rail, clips rigidly secured to the latter for engagement with said link to limit the lateral and vertical motion of the latter, substantially as set forth.

5. In combination in a harrow, a tooth-holding rail, a link formed with a loop at one end and a hook at the other end, and a ring near said loop adapted to fit loosely over said rail, another link formed with a loop at both ends and two rings near the said loops adapted to  
20 fit loosely over the rails, and for engagement with the former link, two clips rigidly secured to each of said rails for engagement with said links and limiting the lateral and  
25 vertical motion of the latter, substantially as set forth. 30

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

ORVIS CURTIS VAUGHN.

Witnesses:

LOUIS FRITZ,  
GEO. L. WAHL.