

No. 767,890.

PATENTED AUG. 16, 1904.

G. W. HOYLE.  
HARROW.

APPLICATION FILED DEC. 30, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

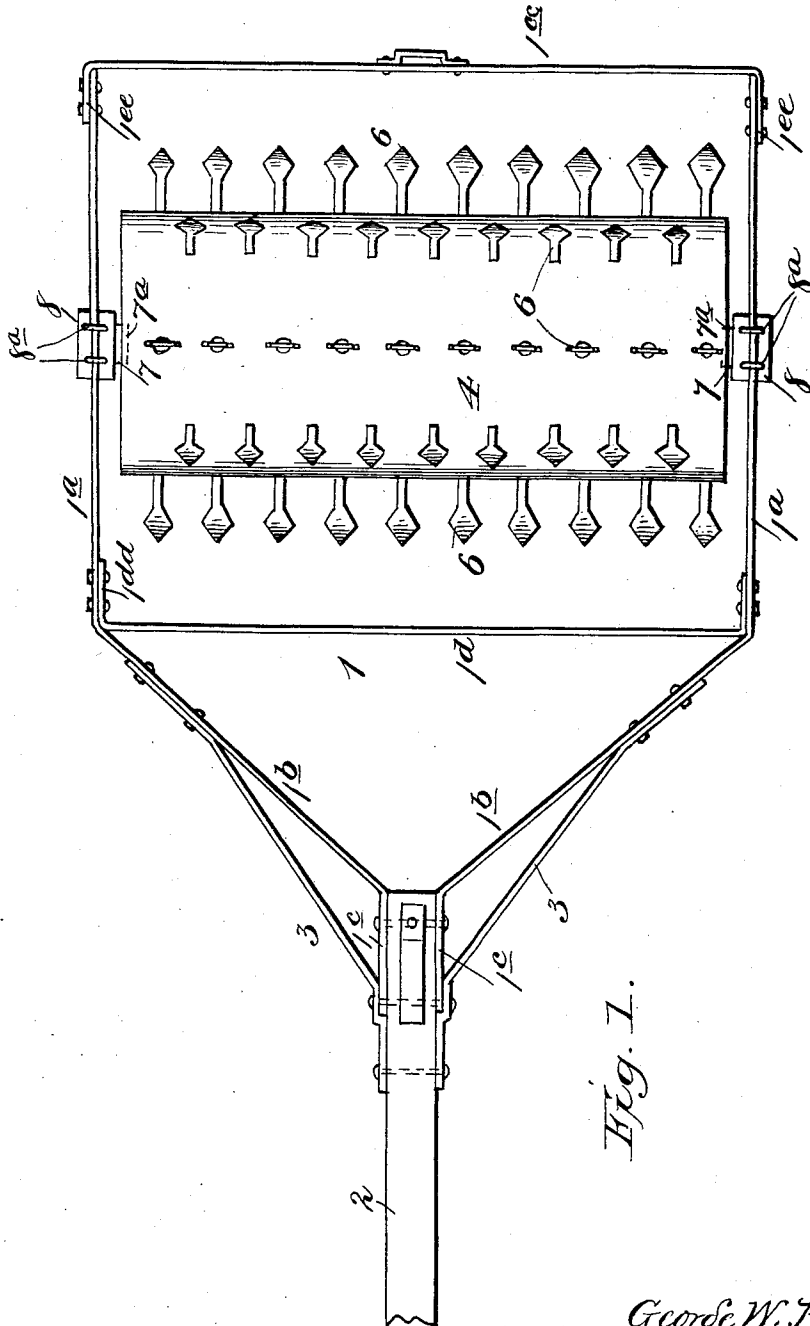


Fig. 1.

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# UNITED STATES PATENT OFFICE.

GEORGE W. HOYLE, OF CLOVERDALE, CALIFORNIA.

## HARROW.

**SPECIFICATION** forming part of Letters Patent No. 767,890, dated August 16, 1904.

Application filed December 30, 1903. Serial No. 187,179. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE W. HOYLE, a citizen of the United States, residing at Cloverdale, in the county of Sonoma and State of California, have invented new and useful Improvements in Harrows, of which the following is a specification.

My invention relates to improvements in harrows, more particularly the rotary type. It has for its object, among other things, to effectively and expeditiously pulverize or comminute the clods of plowed ground and yet leave the ground "loose" in the path of the harrow, while by making minor changes the harrow may be adapted to serve in the capacity of a cultivator or a plow, as occasion may require.

Said invention consists of the combination of parts, including their construction and arrangement, substantially as hereinafter more fully disclosed, and specifically pointed, out by the claim concluding the following specification.

In the accompanying drawings, illustrating the preferred embodiment of my invention, Figure 1 is a plan view thereof. Fig. 2 is an enlarged detailed end view disclosing more especially one of the pulverizer-roller-shaft bearings and frame-side-bar supports. Fig. 3 is a lateral view of said part or bearing and support.

In carrying out my invention I construct a carrying-frame 1 preferably of metal with the side or lateral bars 1<sup>a</sup> thereof extending, say, from the extreme rear end of the machine or harrow forward a suitable distance, then inclined or converged inward, as at 1<sup>b</sup>, the convergent portions being further extended forward, but parallel, as at 1<sup>c</sup>, to receive, and between which is secured, the tongue 2, the usual hammer-strap being provided therefor. Lateral braces 3 of metal are secured at their ends to the inclined or convergent portions 1<sup>b</sup> and to the parallel extensions 1<sup>c</sup>, respectively, as shown. Corresponding sections 1<sup>d</sup> 1<sup>cc</sup> are provided for forming the forward and rear end portions or bars of said carrying-frame, the former having inturned end portions or terminals 1<sup>dd</sup> suitably secured to said lateral bars upon their inside and the latter having for-

ward-extended terminals 1<sup>ee</sup> secured to the outside of said lateral bars.

A roller 4, which may be of cylindrical log or metal construction and, if of the former, bound or encompassed at the ends by metal bands, is suitably journaled in or carried by the frame 1, as presently disclosed, and equipped with a plurality of rows of substantially diamond-pointed teeth or shovels 6, adapted to be screwed into said roller in its periphery and having their points flattened, said teeth or shovels being preferably of soft steel in the main and tipped with hard steel. The teeth or shovels of successive rows alternate each other throughout, as shown, and are adapted to effectively or thoroughly pulverize or comminute all clods turned up in plowing the ground, and yet as the tooth-carrying roller passes over the surface leaving the ground loose, as desired. Said roller has suitably inserted or secured in its ends journals 6<sup>a</sup>, angular or square in cross-section where they are contained within said roller and having keyed thereon, as at 6<sup>b</sup>, collars 7, said collars being embedded into the ends of said roller—say to the dotted line 7<sup>a</sup>—while that portion of each roller beyond said line extends outside of said roller, thus providing for offsetting the ends of said roller from the boxing (next described) carrying or receiving the journals.

A boxing 8 for receiving each end of the journals 6<sup>a</sup>, as above noted, has passed vertically therethrough and suitably held thereto, as shown, duplicate spaced-apart yokes 8<sup>a</sup> for suspending said boxing from the frame 1, the looped or bowed portions of said yokes encompassing the lateral bars 1<sup>a</sup> of the latter. Said lateral bars 1<sup>a</sup> have each a vertical recess or notch 8<sup>b</sup> in its upper edge to receive the lower edge of the loop of each yoke, as shown, while each boxing has in its upper edge also a vertical slot or recess 9 to receive the lower edge of each lateral bar 1<sup>a</sup>, whereby said yoke and boxing are held against longitudinal displacement or movement upon said bars and yet providing for the ready attachment of the boxing and roller-journals to the latter and equally so the removal of said parts therefrom, as desired. Said boxing or boxes are so disposed with relation to the lateral bars of the

frame 1 as that each stands with about half of  
its cross-section upon the inside of each of  
said lateral bars, said latter portion or half of  
said boxing abutting or contacting with the  
5 collars 7, secured upon the journals of said  
roller, thus preventing endwise or lateral  
movement of said roller.

It is understood that latitude is allowed  
herein as to details, as they may be changed  
10 as circumstances suggest without departing  
from the spirit of my invention and the latter  
yet be protected.

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

The combination of a carrying-frame, a pul-  
verizing-roller, journals secured in said roller,  
and boxes for the reception of said journals,  
each box having in its upper edge a slot re-  
ceiving the lower edge of a lateral bar of said 20  
frame, and a yoke connected to said box and  
having its bowed portion engaging a notch in  
the upper edge of said lateral bar.

In testimony whereof I have signed my name  
to this specification in the presence of two sub- 25  
scribing witnesses.

GEORGE W. HOYLE.

Witnesses:

B. A. DUNN,  
JOHN ALLEN.