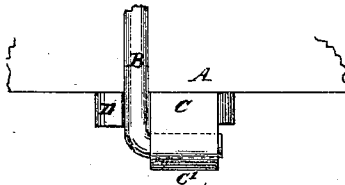
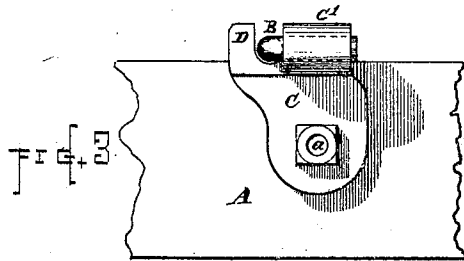
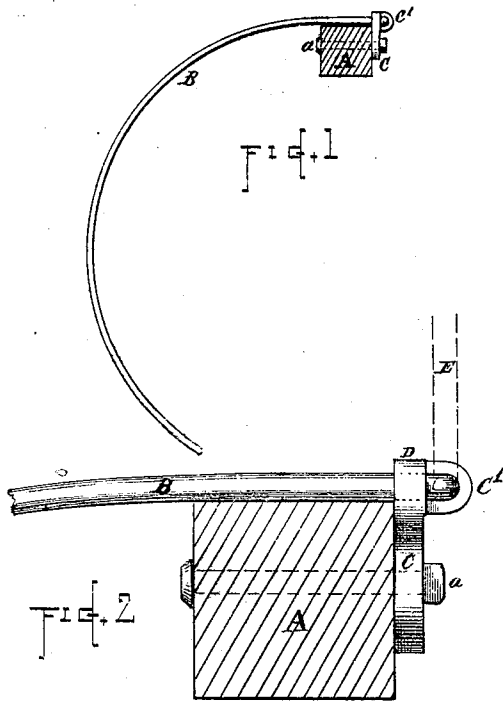


J. H. BULLARD.

Improvement in Horse Hay-Rakes.

No. 133,012.

Patented Nov. 12, 1872.



Witnesses

*S. S. Taylor*  
*Andrew Gale*

Fig. 4

Inventor

*James H. Bullard*

# UNITED STATES PATENT OFFICE.

JAMES H. BULLARD, OF CHICOPEE, MASSACHUSETTS.

## IMPROVEMENT IN HORSE HAY-RAKES.

Specification forming part of Letters Patent No. 133,012, dated November 12, 1872.

*To all whom it may concern:*

Be it known that I, JAMES H. BULLARD, of Chicopee, in the county of Hampden and Commonwealth of Massachusetts, have invented a certain new and useful Improvement in Horse Hay-Rakes; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing forming a part of this specification, and in which—

Figure 1 represents a side view of a rake-tooth and its holding-iron, the axle being shown in section. Fig. 2 represents a similar view drawn to a large scale. Fig. 3 represents a front view of the holding-iron, and Fig. 4 represents a plan view of the same.

The nature of my invention consists in the combination, with the axle and tooth in a horse hay-rake, of a peculiarly-constructed holding or joint iron for securing said parts to each other, as hereinafter described.

In the drawing, the part marked A represents the axle or rake-head. B indicates the metallic tooth, and C indicates the holding-iron, which latter is secured to the front of the axle A by a bolt, *a*; or, if preferred, it may be attached by means of screws. The holding-iron or joint-piece C is made with a head or socket, C', which projects above the top of the axle or rake-head A, and through which the upper end of the tooth B passes in a horizontal direction parallel with the axle, the end of the tooth B being bent around at a right angle for that purpose, thus forming a hinge-joint, which connects the tooth B to the axle or head A, and which permits the lower end of the tooth B to swing up or down in a vertical plane, while it is sustained against lateral pressure or movement. A lug, D, is formed upon the piece C, which lug projects up at the opposite side of the tooth, as indicated, and prevents the end of the tooth from being drawn out from the socket C' when the tooth is down near the axle or head A, as indicated

in full lines in the drawing; but when the tooth is raised or swung up to the position indicated by dotted lines at E, Fig. 2, the end of the tooth can readily be withdrawn from the socket C' and the tooth thereby disengaged from the rake-head or axle A.

In the present instance my invention is illustrated as applied to a rake in which the teeth are raised by turning or rotating the axle or rake-head A; but it may be applied with equally good result to rakes wherein the teeth are raised by other means or by mechanism acting independent of the axle or rake-head.

Under the arrangement above described each joint-piece or holding-iron for each tooth is an entirety and wholly independent of the others. The lug and socket, being formed in one piece, are maintained in their proper relations to each other at all times; and each joint-iron may be adjusted or removed without regard to or impairing the efficiency of the others. The device, also, is cheap and easily applied to the frame of the rake.

Having described my invention and the manner in which it is to be carried into effect, I will state, in conclusion, that I do not broadly claim the combination of the rake-tooth socket with a lug or stop so arranged that the tooth, while retained by it in the socket under the ordinary conditions of use, may be turned up far enough to clear the lug and permit the withdrawal of its shank from the socket. I am aware that this feature is not new.

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

A joint-iron for holding a rake-tooth to the part which supports the teeth in a horse-rake, consisting of the socket-piece C C' and lug D, formed in one piece, and applied and used as herein shown and described.

JAMES H. BULLARD.

Witnesses:

GEORGE S. TAYLOR,  
ANDREW GALE.