

(No Model.)

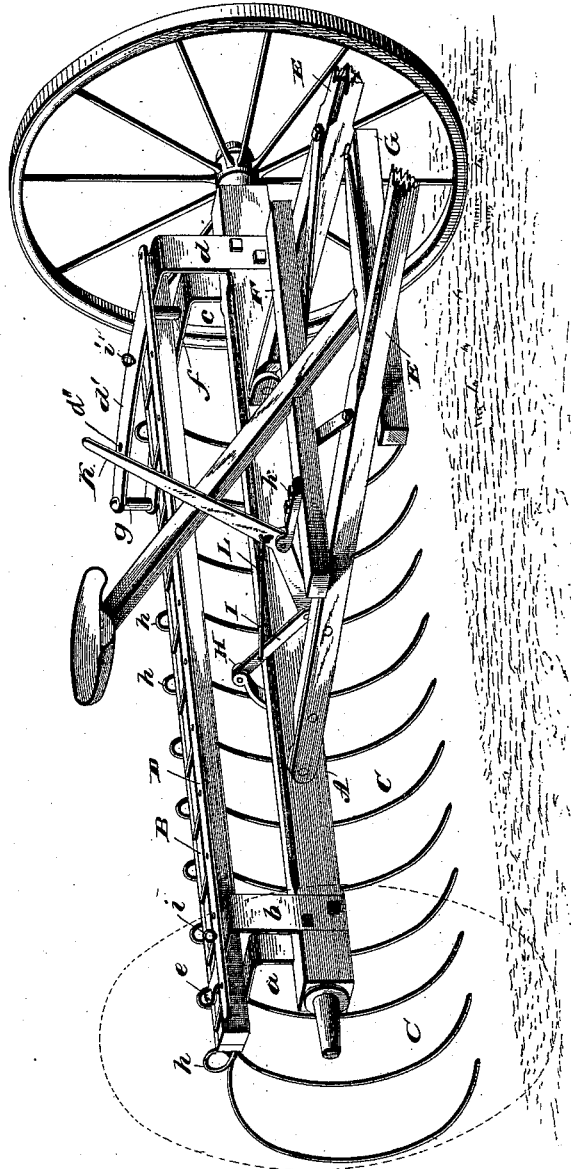
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G. KEITH.  
HORSE HAY RAKE.

No. 381,840.

Patented Apr. 24, 1888.

Fig. 1.



WITNESSES.  
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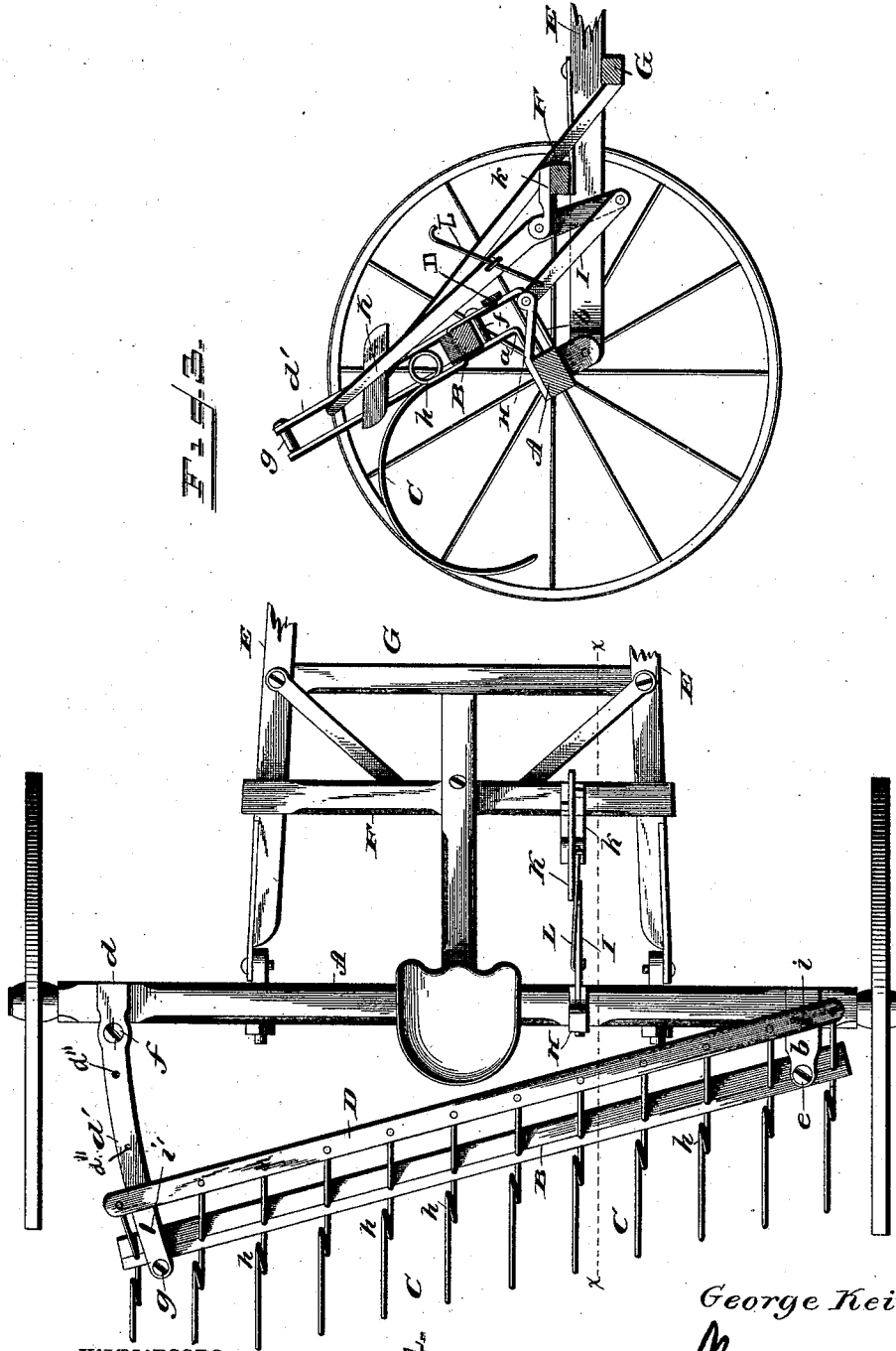
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# UNITED STATES PATENT OFFICE.

GEORGE KEITH, OF FREEDOM, ILLINOIS.

## HORSE HAY-RAKE.

SPECIFICATION forming part of Letters Patent No. 381,840, dated April 24, 1888.

Application filed October 20, 1887. Serial No. 252,921. (No model.)

### *To all whom it may concern:*

Be it known that I, GEORGE KEITH, a citizen of the United States of America, residing at Freedom, in the county of La Salle and State of Illinois, have invented certain new and useful Improvements in Horse Hay-Rakes; 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 or figures of reference marked thereon, which form a part of this specification.

My invention relates to certain new and useful improvements in horse hay-rakes, the object being to provide a cheap and effective rake which is provided with means whereby a series of teeth can be adjusted so as to be either parallel or at an angle with the axle, the individual teeth of the series, whether said series be adjusted so as to be parallel or at an angle with the axle, being at right angles with the axle or in the line of draft.

My invention consists in the special construction and combination of the parts, as will be hereinafter fully set forth, and pointed out in the claims.

In the accompanying drawings, which illustrate my invention, Figure 1 is a perspective view of a horse hay-rake constructed in accordance with my invention. Fig. 2 is a top or plan view; and Fig. 3 is a sectional view taken through the line *xx* of Fig. 2, showing the rake-teeth elevated.

A refers to the axle, which is provided near the ends upon which the wheels are mounted with brackets having their rearwardly-extending upper ends forked for the reception of a rake-head, B. The brackets illustrated consist of plates *a*, *b*, *c*, and *d*, which are rigidly secured to the axle and extend upwardly therefrom, the upper ends being bent rearwardly. The upper ends of the bracket-plates *a* and *b*, which extend only a slight distance rearwardly, are connected to each other at their upper ends by a vertical bolt or pivot, *e*, which also serves to pivotally hold in place one end of a rake-head, consisting of a compound bar, B, through which bar the rake-teeth pass. The ends of the bracket-plates *c* and *d*, which

are attached near the opposite end of the axle from the brackets *a b*, curve rearward at their upper ends in a segment of a circle, the radial center of said curve being the pivot or bolt *e*. The curved portion of the brackets *c* and *d* are connected to each other by vertical bolts and sleeves *f* and *g*, which serve to connect the same to each other and hold them parallel. The upper curved portion, *d'*, of the bracket-plate *d* is provided with perforations, through which pins may pass vertically for holding the bar B either parallel with the axle or at an angle therewith.

The rake-teeth C C are curved in the usual manner, and are provided near their upper ends with a spring portion, *h*, and they are further bent, so as to provide near their upper ends a vertical portion, which passes through recesses in the bar B, and from thence are bent forwardly, the front ends being turned upwardly, so as to engage with a flat bar, D.

The bar B, hereinbefore referred to, is composed of two longitudinal strips, the meeting faces of which are provided with recesses, through which the bars forming the rake-teeth C pass. Preferably the front portion of the bar is made of wood, while the rear portion is of metal, and may be bolted thereto, so as to be readily removed in case one of the rake-teeth should become broken, so as to render it necessary to remove said tooth and replace the same. The metal backing-strip, having recesses, also forms, with the recesses in the wood strip, secure bearings for the teeth, and stiffens the wooden bar in front of the same.

The bar D, which is preferably a flat metallic strip, is pivotally secured to the bracket *b* by a pivot-pin, *i*, so that when the bars B and D are swung at an angle with the axle, as shown in Fig. 2, the bars B and D will move so as to be parallel with each other, and the teeth will be kept at right angles with the axle, thereby placing the teeth in such a position that a strain upon the same will be upon the line of draft and all side strain avoided.

To the front edge of the axle are pivotally secured shafts E E, to which shafts are suitably attached cross-bars F and G, which serve to support the beam which carries the driver's seat.

The axle A is provided between the ends of the shaft with an upwardly-projecting bar, H, the end of which is bifurcated for the reception of a link, I, said link being pivoted to the lower end of a bent lever, K, which is pivotally attached at its bend to a casting, *k*, which is secured to the cross-beam F. The lever and link I are connected to each other by a bar, L, the rear end of which is hooked, so as to engage with a perforation in the link I, while the front end passes through and moves freely in a staple attached to the lever K, the front end being bent so as to engage with said staple. By this construction, when it is desired to elevate the rake-teeth, by simply moving the upper end of the lever rearwardly, the axle will be rocked and carry the rake-teeth with it until the upper end of the lever comes in contact with the cross-bars to which the rake-teeth are attached, in which position the rake is retained, as the heavier part thereof is in vertical plane with its pivotal support, the axle A, and a constant downward pressure is exerted on the links which couple the shaft to the axle by the weight of the driver and of the shafts. When the upper end of the lever is thrown forwardly, the outward movement of the same will be limited by the hooked bar L. By this construction I avoid the use of ratchet-teeth or locking-pawls and provide a cheap and effective means for raising the rake-teeth for transporting the implement or dumping hay from the teeth.

When it is desired to use my improved rake with the teeth arranged so as to be parallel with the axle, the parts are organized as shown in Fig. 1—that is to say, the bar B is moved forwardly until it abuts against the sleeve or bolt *f*, and it is secured in this position by a pin, *i*; the rake may be then used in the usual manner for gathering hay; and to dump the hay which is gathered by the teeth it is only necessary to move rearwardly the upper end of the lever K, which will turn the axle and carry the rake-teeth with it.

When it is desired to adjust the teeth so that they will be at an angle with the axle, the pin *i*, which retains the bar B, is removed, and the bar is permitted to slide between the curved rearwardly-extending plates, and may be secured by a pin, *i'*, in an inclined position with respect to the axle, the teeth will be turned by the bar D, so as to be on a line with the draft, and the hay which is gathered by the teeth will slide along the inclined teeth without being dumped from the same in ridges or windrows.

The device hereinbefore described is simple in construction and is not liable to get out of order, and may be used either as an ordinary horse hay-rake or as one for raking and placing the hay.

I claim—

1. In a horse hay-rake, the combination, substantially as described, of the axle, the long and short armed brackets rigidly secured

to the axle at each end thereof, the arms of the said brackets being arranged one above the other, and the long arms of the one bracket curved, as set forth, the rake, the head of which is pivoted in the short-armed bracket at one end and capable of having free movement between the long curved arms of the other bracket at its opposite end, and a pin to secure the rake-head against movement between the arms of the latter bracket.

2. In a horse hay-rake, the combination of the axle provided with brackets near its outer ends having rearwardly-extending arms arranged one above the other, the arms of the one bracket having a greater rearward extent than the arms of the other bracket and constructed of a segmental curved configuration, as set forth, a rake, the head of which is pivotally secured at one end in the short-armed bracket and capable of having free movement in the long-armed bracket at its opposite end, and a bar, D, pivoted to the short-armed bracket, to which the rake-head is also pivoted, the said bar bearing upon the long-armed bracket at its opposite end, the rake-teeth being connected to the head by vertical pivots and having their forward extensions connected to bar D by vertical pivots, whereby the said rake-teeth will remain at right angles with the axle, substantially as described.

3. The combination, in a horse hay-rake, of a rake-head composed of two pieces, the meeting faces of which are recessed, spring-teeth journaled in said recesses and having forwardly-projecting ends, the axle having long and short armed brackets secured to opposite ends thereof, in which the rake is mounted and operates, and a bar, D, arranged above and parallel with the rake-head and pivotally connected to the forwardly-projecting ends of the rake-teeth and secured at one end to the short-armed bracket, to which the rake-head is connected, and having bearing on the long-armed bracket at its other end, substantially as described.

4. In a horse hay-rake, the combination, substantially as described, of the axle provided with forwardly-projecting lugs, the shaft pivoted to said lugs, the rearwardly-extending brackets rigidly secured to the axle at each end thereof and constructed with long and short arms which are arranged one above the other, all as set forth, the rake-head, the said head being pivotally supported at one end in the short-armed bracket and at its opposite end capable of having movement in the long-armed bracket, a projecting arm rigidly secured to the axle, a lever pivoted to the cross-bar of the shafts, and a link connecting the arm on the axle with the lower end of the lever.

5. In a horse hay-rake, the combination, substantially as described, of the axle, the shafts pivotally connected therewith, brackets rigidly secured to the axle and provided with

rearwardly - extending arms, the rake-head  
arranged between the upper and lower arms  
of said brackets, an upwardly-projecting arm  
rigidly secured to the axle, a lever pivotally  
5 connected to the shafts, a link to connect said  
arm and lever, and a hooked rod pivoted to  
the link and arranged to slide through a sta-  
ple secured to the lever above its fulcrum.

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

GEORGE KEITH.

Witnesses:

C. B. CHAPMAN,  
EMMA L. RICHARDSON.