A. B. BARNARD.

Horse Hay Rake.

No. 100,104. Patented Feb'y 22, 1870.

Fig. 1

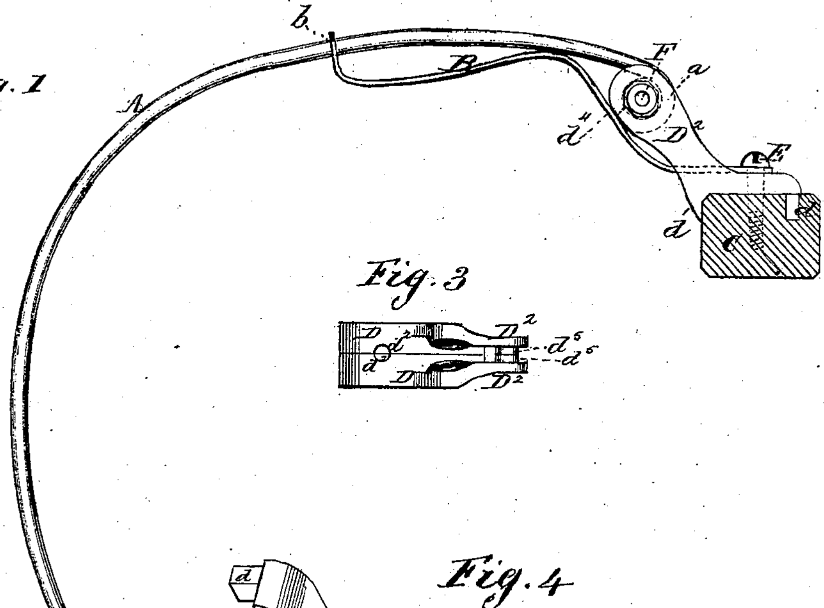


Fig. 3

Fig. 4

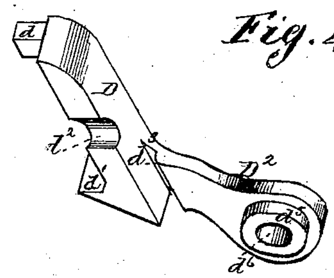
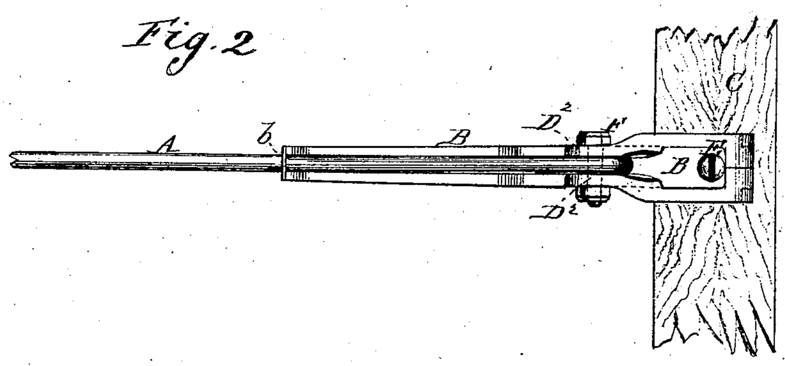


Fig. 2



Witnesses
J. H. Adam
Thomas C. Smith

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A. B. BARNARD, OF WORCESTER, MASSACHUSETTS.

Letters Patent No. 100,104, *dated February* 22, 1870.

IMPROVEMENT IN HORSE HAY-RAKES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, A. B. BARNARD, of Worcester, in the county of Worcester, and State of Massachusetts, have invented certain new and useful Improvements in Horse-Rakes; and I do hereby declare the following to be a full, clear, and exact description of the same, sufficient to enable others skilled in the art to which the invention appertains to fully understand and use the same, reference being had to the accompanying drawings which are made part of this specification, and in which—

Figure 1 is a side elevation of a rake-tooth, spring and holder as applied to a rake-head, the latter being shown in transverse section;

Figure 2 is a plan of the parts shown in fig. 1.

Figure 3 is a plan of the rake-tooth holder; and

Figure 4 is a perspective view of one of the two separate parts which constitute the holder.

Similar letters of reference indicate corresponding parts in the several figures.

The invention consists in the arrangement of the rake-tooth and restoring-spring in relation to a two-part holder secured to the rake-head, as will be hereinafter described.

In the drawings—

A represents a rod or wire-tooth, which has applied to it a spring, B, to restore the tooth to its normal condition after it has yielded to the extent demanded in overriding an extraordinary obstruction.

One end of the rake-tooth A is secured to the head C of the rake by a holder to be hereinafter particularly described.

The spring B is likewise secured at one end to the rake-head in a manner to be explained, and its free end forms a junction with the rake-tooth at a suitable point between its ends.

The special form in which the spring is represented is merely designed to conduce to its resilient power and efficacy, but the shape of the spring is susceptible of modification.

The end of the spring which is fastened or held, is not free to give or move in any direction.

It is a flat spring, and capable of opposing considerable resistance to transverse or torsional strain.

I make the last-mentioned property of the spring available in carrying out the very important object of making the spring constitute a brace to hold the tooth against lateral movement or displacement when it meets such surmountable impediments as have a tendency to deflect the tooth sidewise.

To this end the tooth A passes through an eye at *b* in the rear end of the spring B, hence the tooth has lateral support between its ends as aforesaid.

The connection between the rear end of the spring and the tooth might be effected otherwise than by means of the eye *b*, without departing from the intrinsic principle of my invention; but it is believed the provision of the eye is the most simple and desirable method of attaining the object in view.

In fig. 3 is shown a top view of the "holder," the same being the appliance whereby the tooth A and spring B are fastened to the rake-head.

This holder is cast in two parts, D D, each of which is of the form and construction shown in fig. 4.

A projection, *d*, on the forward end of each part D is imbedded in the top of the rake-head, and these projections serve, in conjunction with shoulders d^1, abutting against the back of the rake-head, to retain the holder in position against any lateral force or strain to which it may be subjected.

A groove or channel, d^2, which may be semicircular in cross-section, is produced in the act of casting each of the parts D.

When these grooves are set opposite each other in securing the two parts of the holder side by side to the rake-head, they form a bolt-hole to admit the bolt E, or screw, which securely unites the rake-head and holder.

The said bolt or screw E also fastens to the holder, the forward end of the spring B, which is braced laterally in consequence of fitting snugly between the two parts of the holder D.

Any uprising tendency of the spring B at its forward extremity is effectively counteracted by the shoulders or offsets d^3, beneath which the sides of the spring B are confined. Said shoulders, independently of the bolt E, serve to hold against vertical movement a straight portion of the spring at or near its attached end, and thus the bolt is relieved of much strain, which would have a tendency to loosen and impair the attachment.

The upward projecting lugs D^2 D^2 of the holder D D, converge toward their tops, so that the spring B, extending backward and upward from the shoulders d^3, has an additional bearing surface on each lug, as seen at d^4, fig. 1; thence the spring extends backward under the tooth.

The hooked end *a* of the tooth is shown in dotted lines in fig. 1. It extends more than half way round a neck which is formed by two bosses, d^5 d^5, which are cast respectively upon the inner faces of the lugs D^2 of the two parts of the holder.

Bolt-holes d^6, cast in the holder, extend through the bosses, and the bolt F, which occupies the same, holds together the upper ends of the two parts of the holder, and at the same time keeps in contact with each other the ends of the bosses d^5.

The bosses d^5 may taper toward their inner ends, or have such other form as will adapt them as a bearing, to conform to the roundness of the tooth.

The mode of casting the two-part holder obviates the drilling of bolt-holes and sundry other difficulties that have hitherto been met with in the manufacture and application of similar devices.

The described method of constructing the spring and combining it with the tooth and holder greatly enhances the utility of the spring, and conduces to the cheapness, compactness, and durability of the machine.

Having described my invention,

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

The arrangement of the rake-head C, the spring B attached to and passing through the divided tooth-holder D, and the tooth A, all constructed and operating substantially as described.

A. B. BARNARD.

Witnesses:

J. H. ADAMS,

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