

(No Model.)

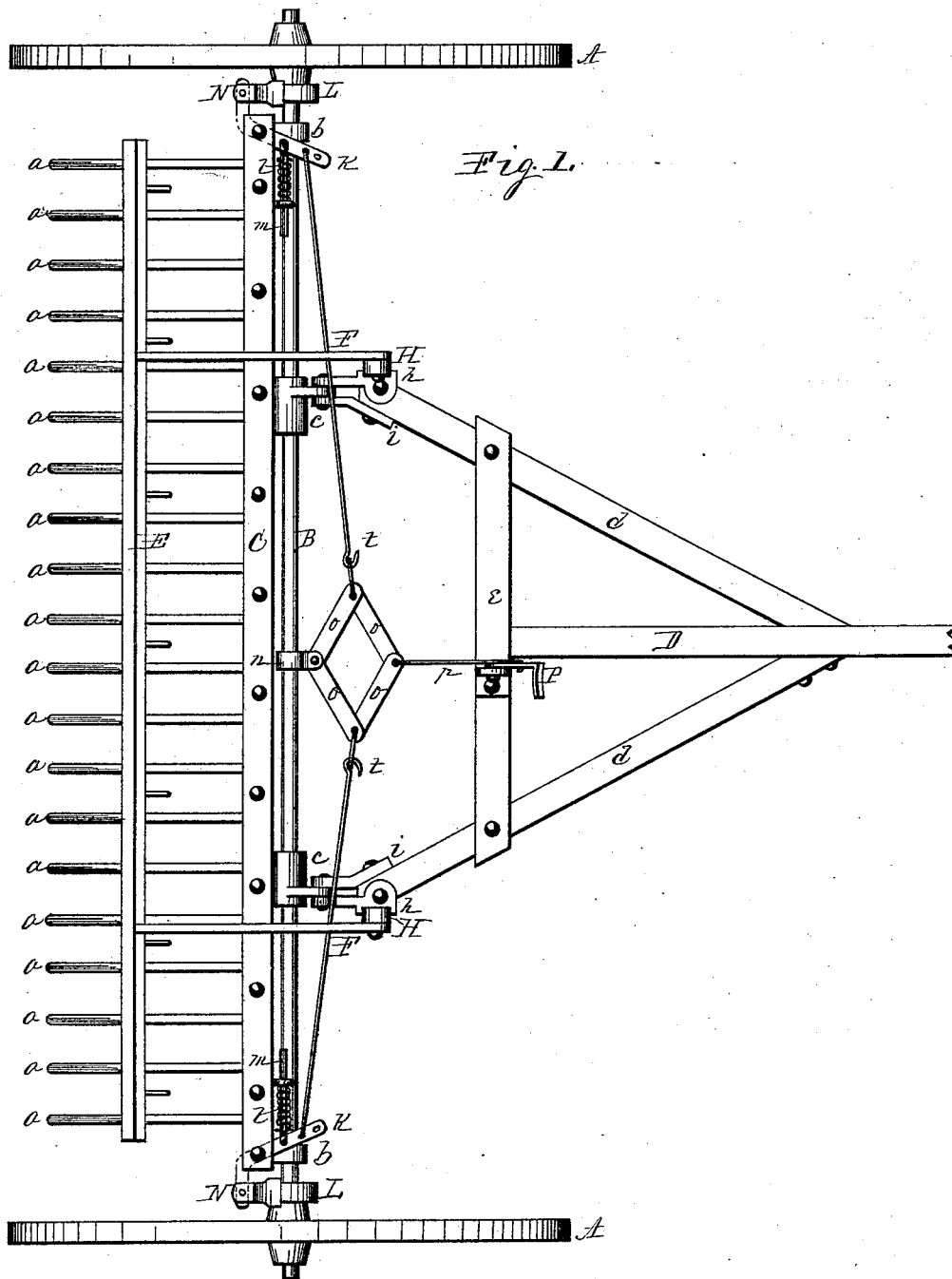
2 Sheets—Sheet 1.

W. A. KNOWLTON.

HORSE HAY RAKE.

No. 304,738.

Patented Sept. 9, 1884.



Witnesses,
A. O. Behel
S. A. H. Behel

Inventor.
William A. Knowlton.
Per Jacob Behr & Co.

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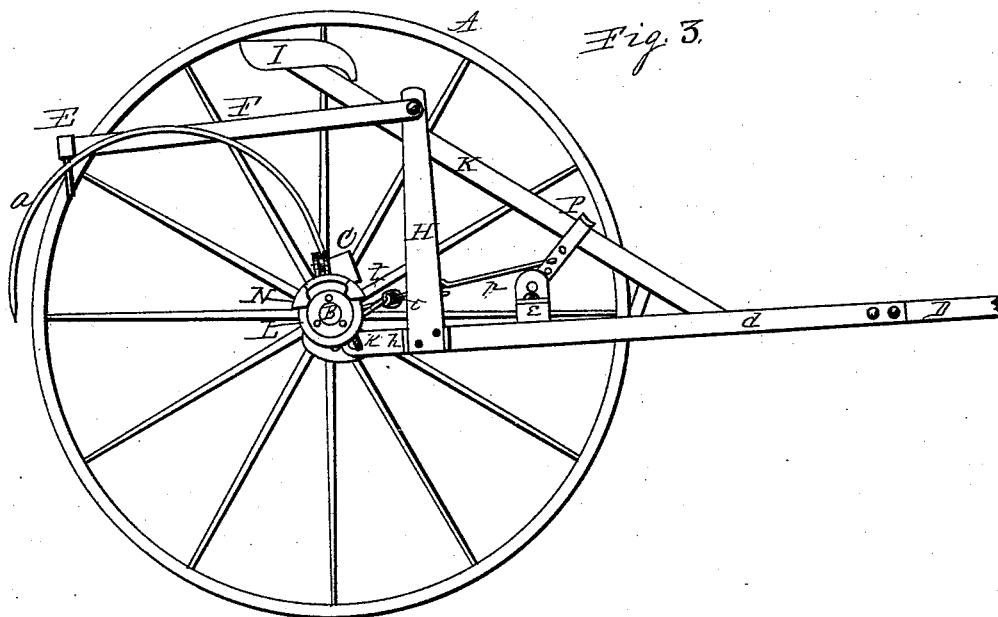
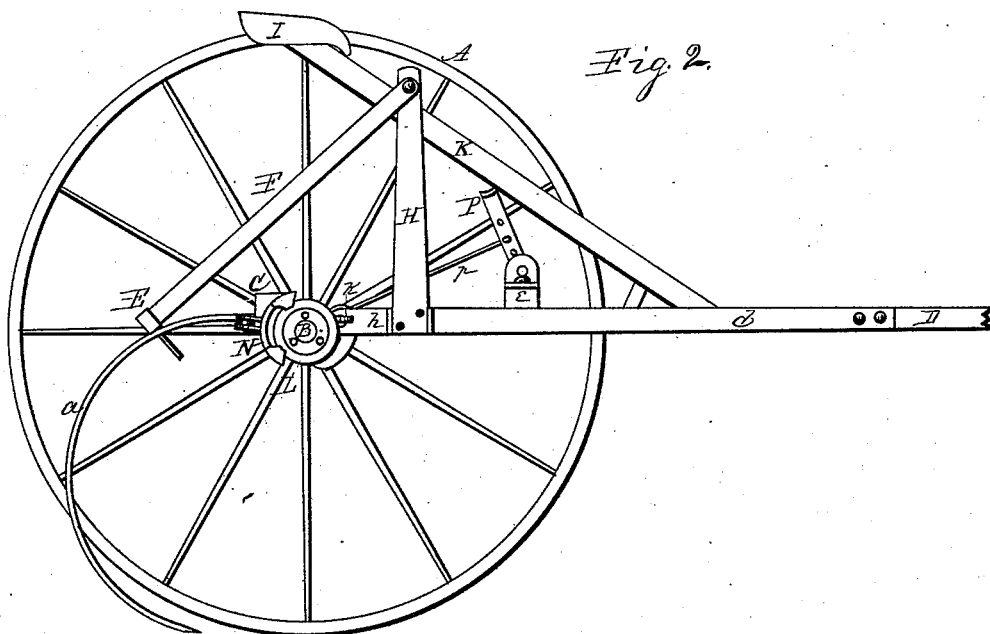
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UNITED STATES PATENT OFFICE.

WILLIAM A. KNOWLTON, OF ROCKFORD, ILLINOIS.

HORSE HAY-RAKE.

SPECIFICATION forming part of Letters Patent No. 304,738, dated September 9, 1884.

Application filed May 29, 1883. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. KNOWLTON, a citizen of the United States, residing in the city of Rockford, in the county of Winnebago and State of Illinois, have invented new and useful Improvements in Horse Hay-Rakes, of which the following is a specification.

This invention relates to that class of horse hay-rakes in which the rake is mounted upon a wheeled carriage, and in which the rake-teeth employed are produced from spring material, preferably of spring-wire; and the object of this invention is to provide this class of rakes with an automatic lift or dump; and it consists in a friction-brake mechanism suitably connected with the rake-head and with the carrying-wheels, and having a toggle-jointed lever-connection with a foot-lever to be operated by the driver mounted in his seat on the wheeled carriage.

In the accompanying drawings, Figure 1 is a plan view of a horse hay-rake embodying my invention. Fig. 2 is a side elevation with one of the carrying-wheels omitted, and in which the parts are in working position. Fig. 3 is also a side elevation with one of the carrying-wheels omitted, and in which the rake-teeth are elevated.

In the figures, A represents carrying-wheels mounted to revolve on the axle-arms of the axle-tree B, which consists of bar material.

C represents a rake-head having rake-teeth *a*, of spring material, fixed therein. This rake-head has a pivotal connection with the axle-tree, by means of eye-brackets *b* and draft eye-brackets *c*, in such a manner as to oscillate thereon.

D represents the tongue fitted with hounds *d*, cross-bar *e*, and coupling-irons *h* and *i*, by means of which the tongue is hinge-jointed to the wheeled carriage.

E represents a discharging-head having a pivotal connection by means of links F, with vertical standards H, in such a manner that the discharging-head will rest on and conform to the vertical movements of the rake-teeth.

I represents a driver's seat mounted upon the rear end of an inclined seat-support, K, fixed to the tongue-frame. These several parts in every particular, including their operation,

are substantially the same as like parts of a machine by me invented, manufactured, and sold to be used, and for which my application for Letters Patent is now pending before the United States Patent Office.

At L are represented friction-wheels, of pulley form, fixed on the inner end of the hub of the carrying-wheels in such a manner as to revolve therewith.

At N are represented brake-shoes of a suitable curved form to engage the periphery of the friction-wheels.

At *k* are represented bell-crank levers, one of which is pivoted in each end of the rake-head and extend forward and rearward thereof, and the rear ends of these levers have a pivotal connection with the brake-shoes, about midway of their length, on their rear in such a manner that the movement of the lever on its fulcrum-support will operate to carry the brake-shoe to or from the friction-wheel.

At *l* is represented a spring supported on a piston-rod, *m*, one end of which is pivot-jointed to the bell-crank lever in front of the rake-head, and its other end is supported to move endwise freely in a suitable guide-support fixed to the forward side of the rake-head. These parts are of such a construction and arrangement that the spring action will operate to hold the brake-shoe disengaged from the friction-wheel.

At *n* is represented an eye-loop supported centrally on the axle-tree in a free manner, to permit the axle-tree to revolve therein freely. To the forward end of this eye-loop is pivoted a system of toggle-levers consisting in this instance of four like bars, *o*, having their ends in pairs pivot-jointed to each other, producing a hinge-jointed frame having four equal or like sides with diagonal opposite corners capable of a free movement toward and from each other. The diagonal corner of this toggle-jointed frame opposite its pivotal connection with the eye-loop *n* is connected by a link, *p*, to a foot-lever, P, having a pivotal support on the tongue or thill frame in such a manner that the forward and rearward movement of the free end of the foot-lever will operate to expand and contract the toggle-jointed frame diagonally. This link *p* is made adjustable in its connection

tion with the foot-lever P by means of a series of holes separated at proper intervals in the lengthwise direction of the lever, in which the hook end of the link may be changed to vary the holding-force of the brake-shoes.

At *t* are represented links employed to connect the forward free arms of the bell-crank levers with the lateral diagonal corners of the toggle-jointed levers in such a manner that the forward movement of the foot-lever will operate to clamp the brake-shoes against the periphery of the friction-wheels. The connections of these links *t* with the bell-crank levers are made adjustable in the lengthwise direction of the lever by means of a series of holes formed therein to receive the hook ends of the links, and are employed to vary the holding-force of the brake-shoes. The construction, arrangement, and the proportion of these several parts are such that a driver mounted in the seat can place his foot upon the free end of the lever P, and press it forward with sufficient force to cause the brake-shoes to engage the friction-wheels with a force sufficient to cause the rake-head to be carried with the rotary movement of the carrying-wheels, which movement will

cause the rake-teeth to rise and unload, dump, or discharge the hay carried in the rake-teeth, and when the foot of the driver is removed from the foot-lever the action of the springs will disengage the brake-shoes from the friction-wheels and permit the teeth to drop to their working position. In this instance I have employed springs to disengage the brake-shoes from the friction-wheels and hold them relieved therefrom; but my improved power-dump is capable of use without these springs, but in such use the shoes might be subject to a slight rubbing action without detriment to its efficiency as a power-dump.

I claim as my invention—

The shoe-actuating lever having a pivotal connection with the rake-head, and the toggle-jointed levers having a suitable link-connection with the shoe-actuating lever, in combination with a foot-lever having a link-connection with the toggle-jointed levers, substantially as and for the purpose set forth.

WILLIAM A. KNOWLTON.

Witnesses:

FRANK P. COLLIER,

A. O. BEHEL.