

(No Model.)

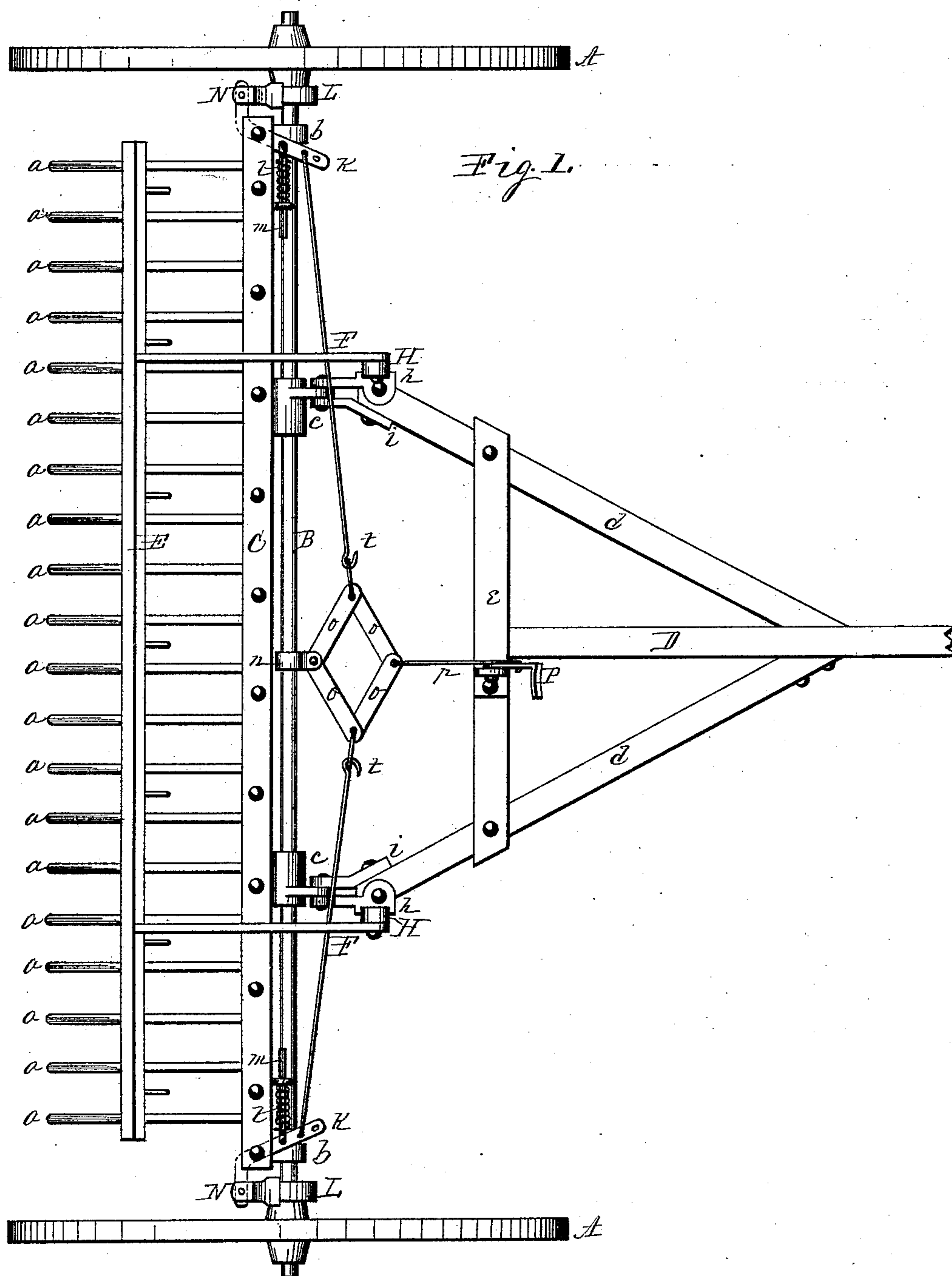
2 Sheets—Sheet 1.

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. Attys.

(No Model.)

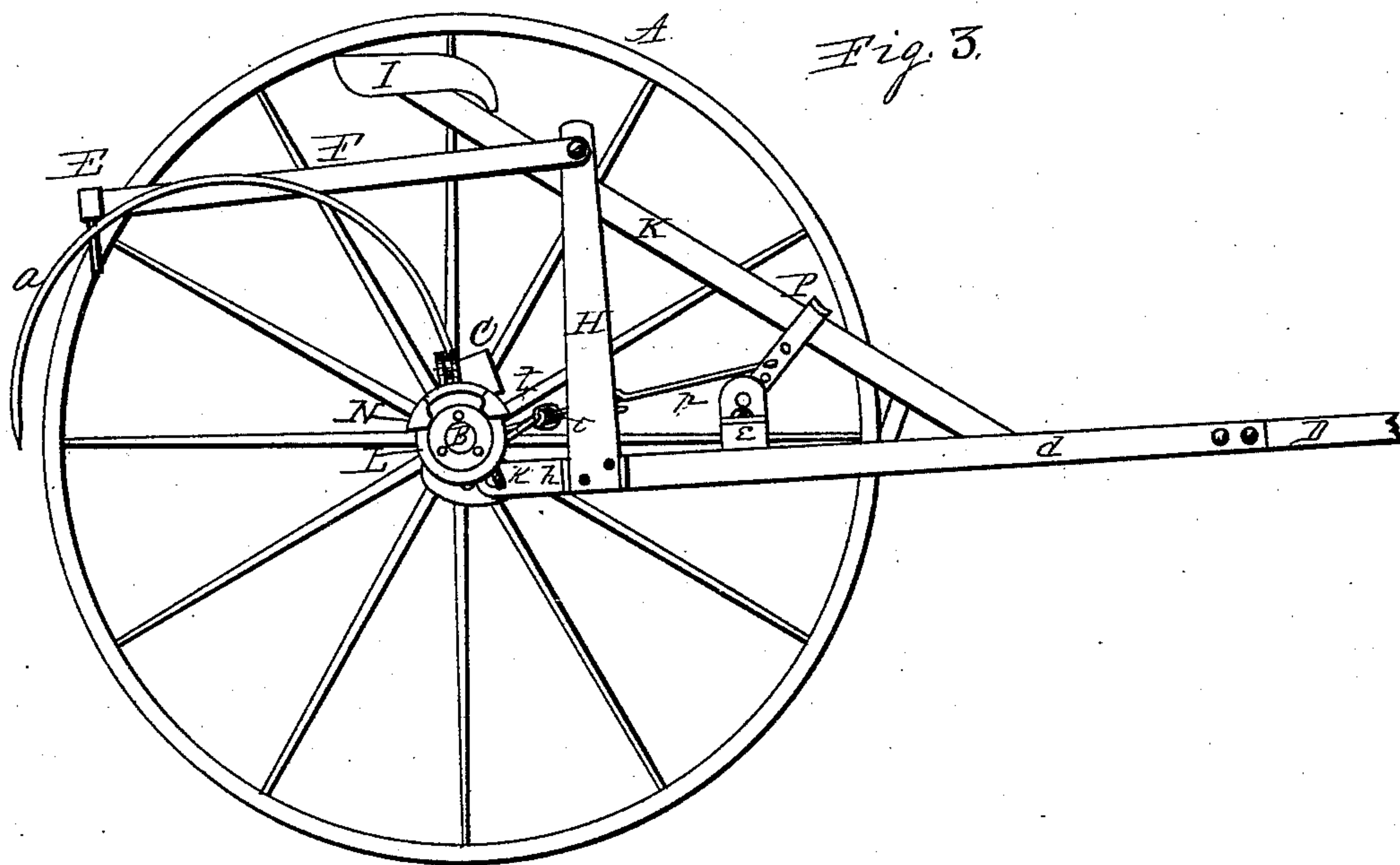
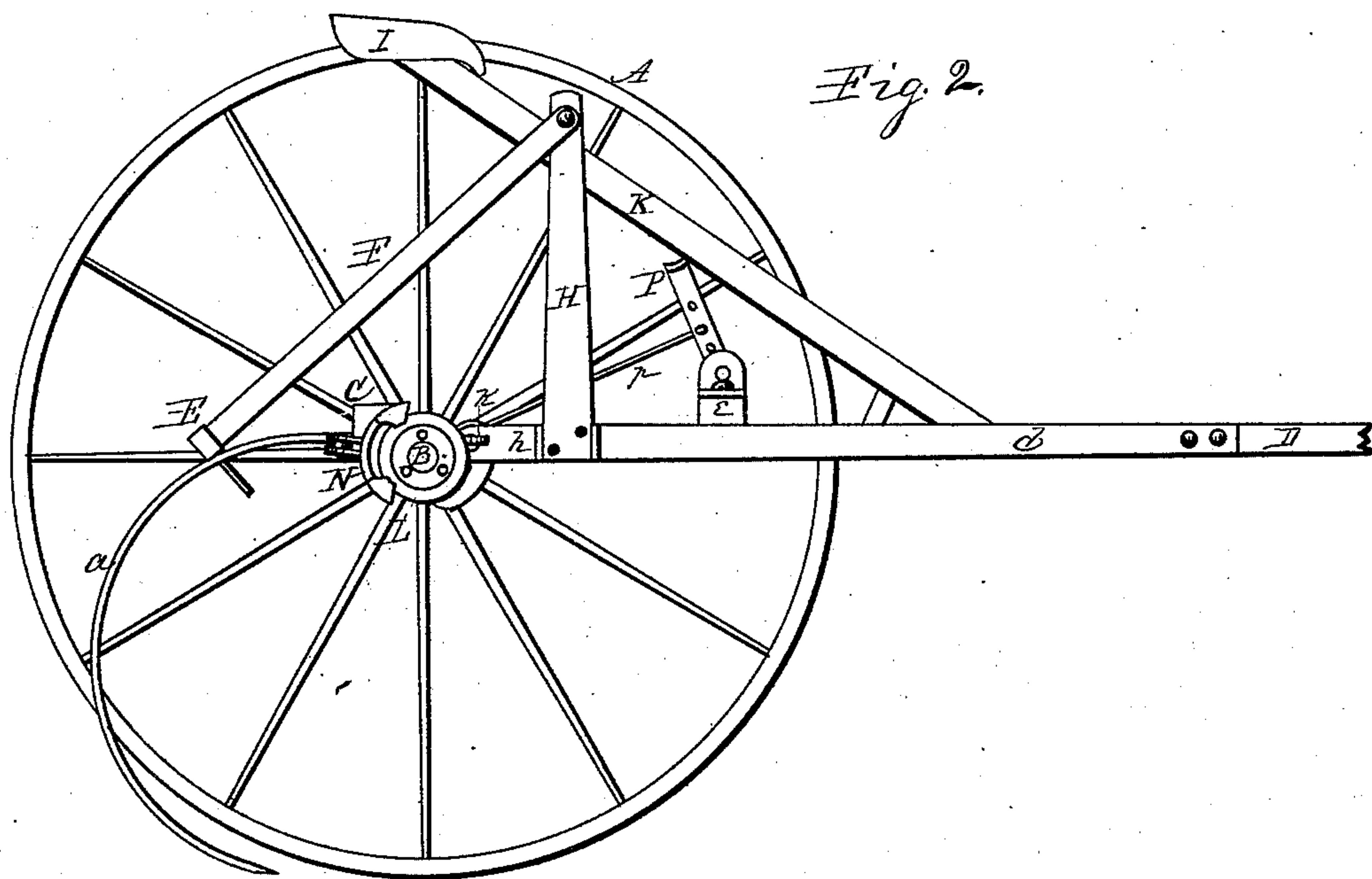
2 Sheets—Sheet 2.

W. A. KNOWLTON.

HORSE HAY RAKE.

No. 304,738.

Patented Sept. 9, 1884.



Witnesses.
A. O. Behel
S. Q. L. Behel

INVENTOR
William A. Knowlton.
Per Jacob Behel Atty.

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.