

(No Model.)

G. E. ROBISON.

HORSE HAY RAKE.

No. 348,866.

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Fig. 1.

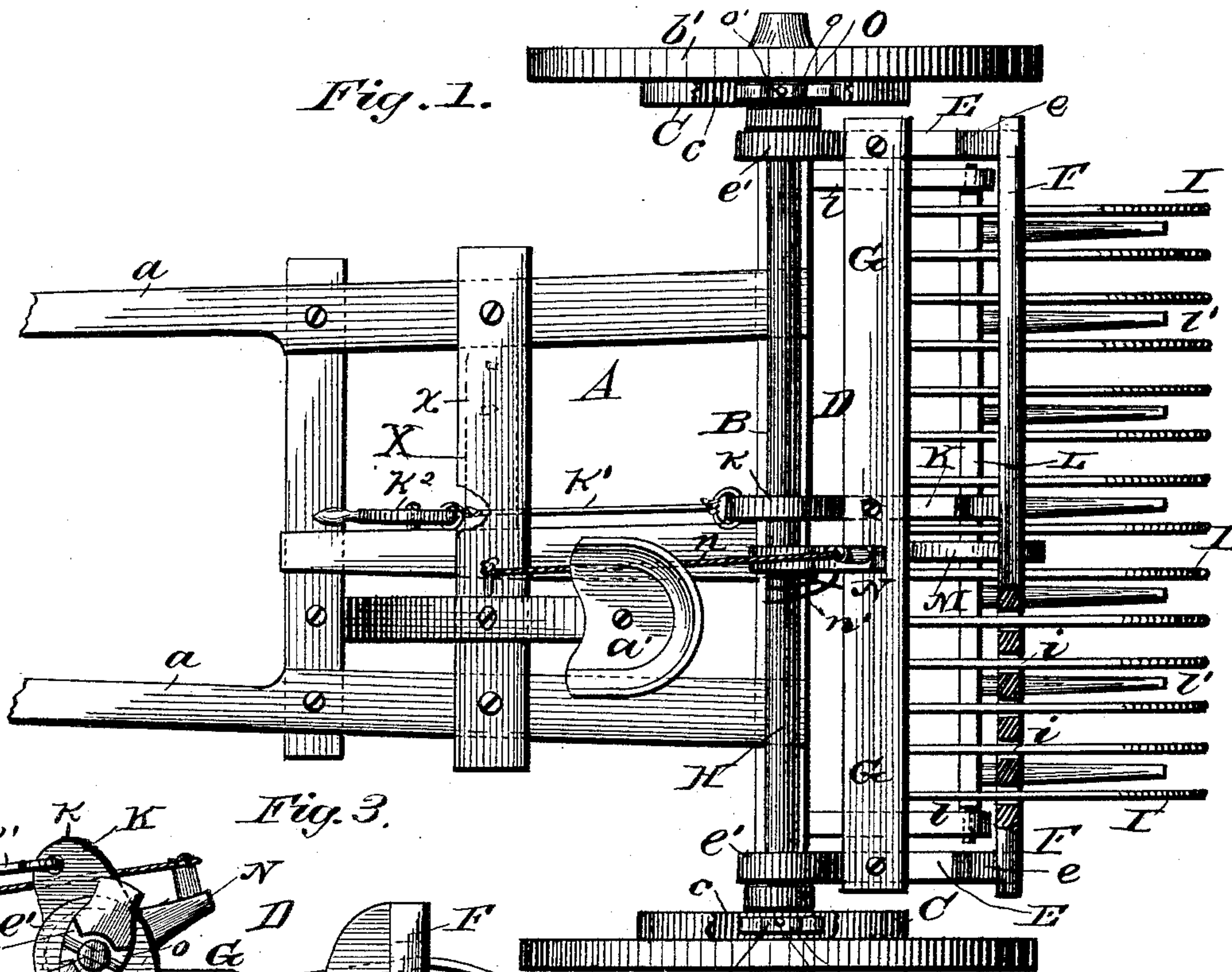


Fig. 3.

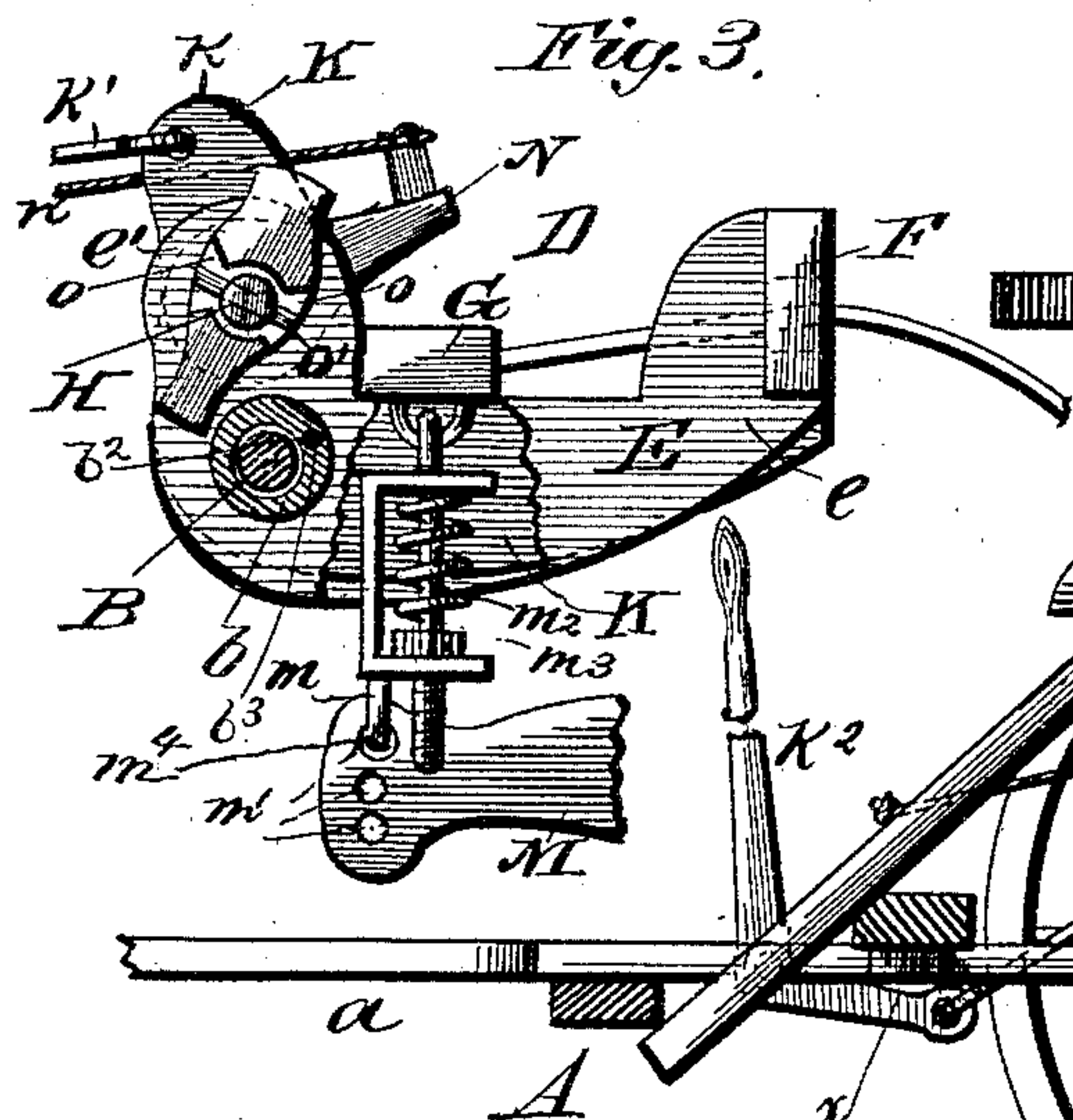


Fig. 2.

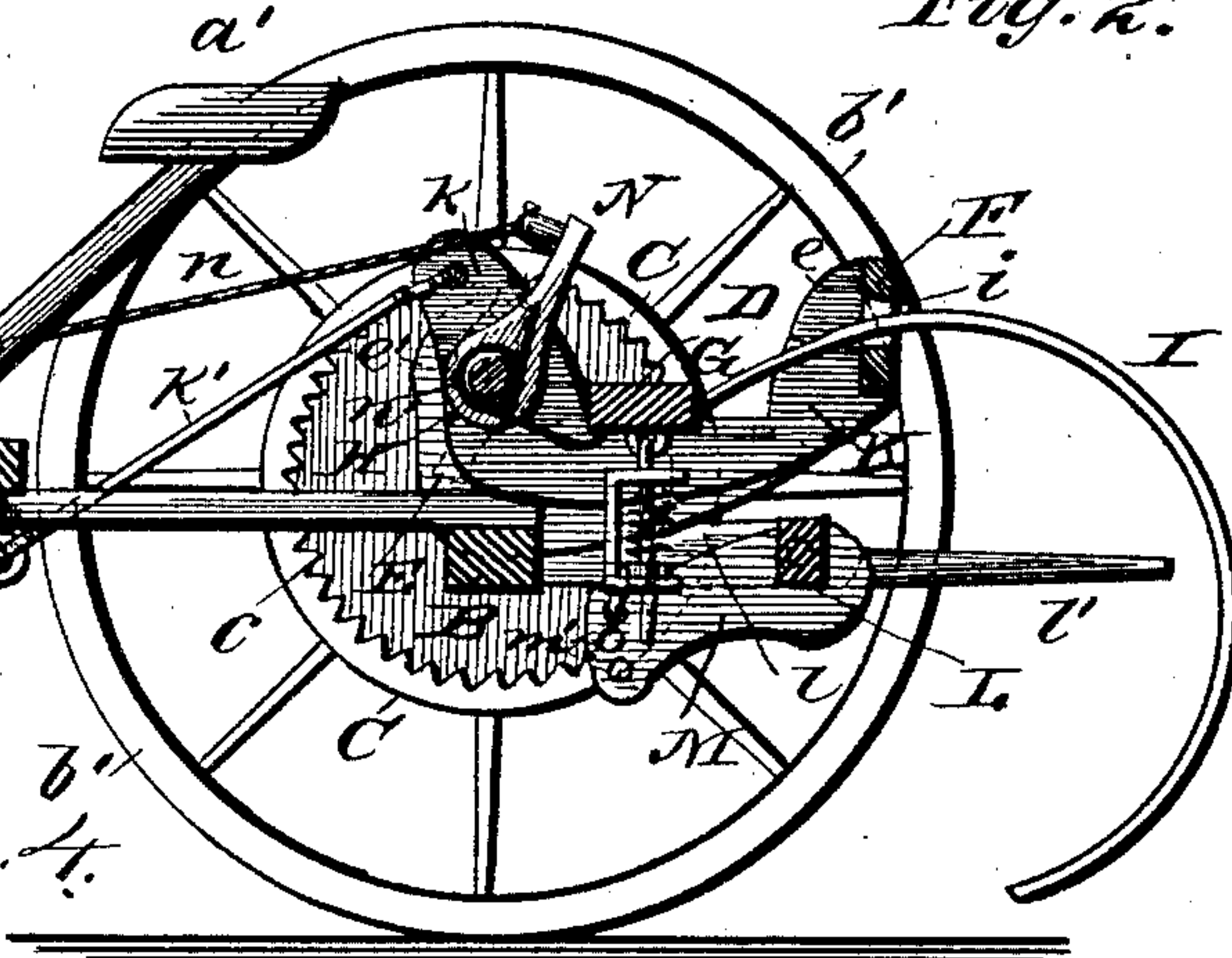
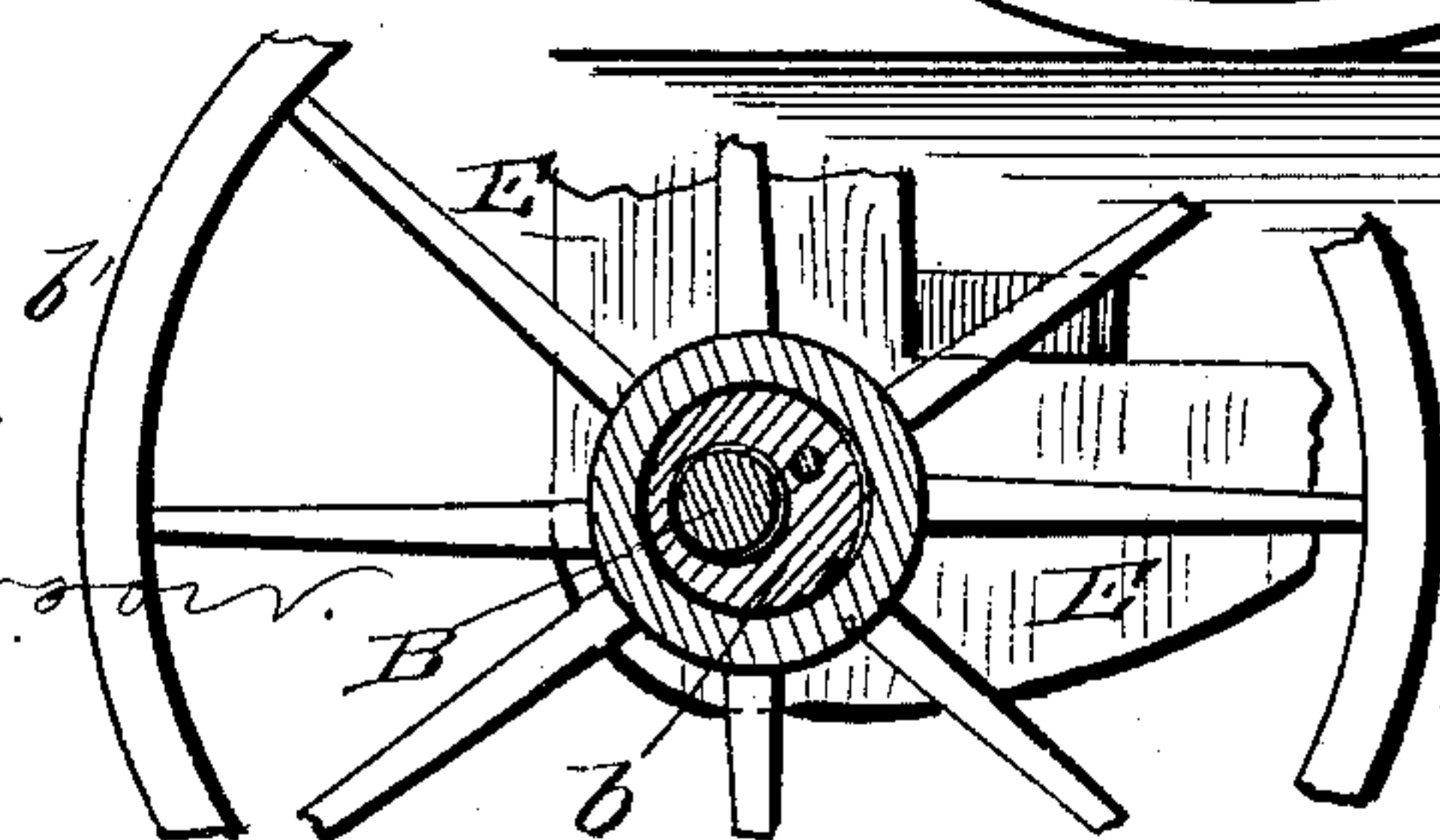


Fig. 4.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

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## HORSE HAY-RAKE.

SPECIFICATION forming part of Letters Patent No. 348,866, dated September 7, 1886.

Application filed November 15, 1884. Serial No. 148,056. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE ELMER ROBISON, a citizen of the United States, residing at Moravia, in the county of Cayuga and State of New York, have invented certain new and useful Improvements in Horse Hay-Rakes; and I do 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.

Figure 1 of the drawings is a plan view of my device. Fig. 2 is a vertical sectional view of the same, and Fig. 3 is a detail view. Fig. 4 is a sectional detail view showing the relative position of the eccentric sleeve, one of the wheels, and the piece E.

This invention relates to improvements in horse hay-rakes, having for its object the more rapid and easy dumping of the hay, and more thorough cleaning of the rake-teeth; and it consists in the construction and novel arrangement of the various parts hereinafter fully described, and pointed out in the appended claims.

Reference being had to the accompanying drawings, and to the letters of reference marked thereon, A represents the frame of the rake, of which *a a* are the shafts, and *a'* the seat.

B is the axle, fixed to the lower part of the frame, and having on its end the eccentric sleeves *b b*, upon which the hubs of the wheels *b' b'* turn.

C is a circular block fixed to the inner surface of each wheel, concentric with the axle, and having formed on its inner side the circular internally-toothed rack *c*, as shown, for a purpose hereinafter explained.

D is a frame composed of the similar end pieces, E, pivoted upon the axle just within the eccentric sleeves *b*, the transverse beam F, fixed to the end of the backwardly-extending arms *e e* of said end pieces, the beam G, fixed transversely across the machine to the upper edges of said end pieces, and the dumping-shaft H, having bearings in the upper ends of vertical arms *e' e'* of said end pieces and oscillating thereon. Each eccentric sleeve *b* is secured to the adjacent end piece E by a pin, *b<sup>3</sup>*, that passes through a longitudinal opening

in the thickest part of the sleeve and enters the end piece.

I I are the rake-teeth, curving backward, downward, and then forward in the usual manner, fixed by their upper ends to the beams G, and passing through the guide-slots *i i* in the beam F, to prevent too great lateral motion.

K is a central piece having a shape similar to that of the end pieces, E, similarly fixed to the beams F and G, and having the dumping-rod H passing through its upright arm *k*. *k'* is a chain or wire connecting the upper end of the said upright arm to the lever *k<sup>2</sup>*, the handle of which is within easy reach of the seat. The said wire connects with the arm of the lever below its pivotal point on the frame of the machine, so that when the driver pulls the upper arm of the lever rearward the wire *k'* is drawn forward, and the whole frame D turns forward by means of said wire and arm *k*, and the rake-teeth are lifted. When the frame turns, the eccentric sleeves *b* turn with it, as they are fixed to the end pieces, E.

X is a transverse spring plate or bar having its outer end secured to the under surface of the transverse bar *x* of the main frame and its inner end free. When the rake-head falls, the joint between the lever *k<sup>2</sup>* and rod *k'* strikes against said free end and reduces thereby the jar of falling.

L is a transverse bar having bearings in and oscillating between the ends of the horizontal bars *l l*, which extend backward from the axle below the frame D on the inner sides of the end pieces thereof. The said bar is provided with the cleaning teeth or rods *l' l'*, extending backward from its rear surface.

M is a bar extending forward from near the center of the bar L, and having its front end pivoted by means of a hook-arm, *m<sup>1</sup>*, to the lower end of a link, *m*, which has arms at right angles to its central portion, as shown. The ends of the said arms are perforated for the passage of a rod, *m<sup>2</sup>*. This rod is connected by a hook and staple, or otherwise, to the lower surface of the beam G, and has a collar on it between the arms of the link. *m<sup>3</sup>* is a coil-spring surrounding the said rod between the collar and upper arm. When the frame D is turned upward, the said link lifts the front end of the bar M and oscillates the bar L, turning the cleaning-rods *l' l'* downward. The hook-



arm  $m^4$  may be inserted into any one of the openings  $m'$  in the bar M, so as to hold the clearing-rods  $l'$  at different angles with relation to the frame D. The spring  $m^3$  is merely  
 5 an extension-spring, to allow freedom of motion between the cleaning-rods and rake-head.

N is a lever-arm fixed to and rising from the dumping-rod H on the side of the center piece, K, nearest the seat, and  $n$  is a cord or chain  
 10 connecting the upper end of said arm to any point of the seat-frame convenient to the driver. By means of this cord the dumping-rod is rotated forward in its bearings in the end pieces, E.

$n'$  is a spring fixed by one end to the arm  
 15 N, surrounding the dumping-rod, and acting, by having its lower end against the under surface of the beam G, so as to return the dumping-rod when the cord  $n$  is released.

O O are pawls connected to the ends of the  
 20 dumping-rod outside of its bearings. Each pawl enters into the hollow on the interior surface of a block, C, and is arranged to engage the teeth of the rack  $c$  when the dumping-bar is rotated forward. The pawls are con-  
 25 nected loosely to and have a slight degree of rotating motion on the ends of the dumping-rod by means of the recesses  $o o$  on their outer surfaces, and the pins  $o' o'$  passing through said recesses and through the ends of the rod,  
 30 thus preventing them from engaging the teeth of the racks too stiffly and suddenly and causing breakage.

When the driver pulls the cord  $n$ , and, by means of the arm N, rotates the dumping-rod  
 35 forward, the pawls engage the rack-teeth and the inward motion of the wheels lift the frame D, of which the dumping-rod is part, also lifting the rake-teeth attached to said frame.

The upward motion of the beam G—a part  
 40 of the frame D—vibrates downward, by means

of the arm M and link  $m$ , the bar L and attached cleaning-rods  $l' l'$ , so that the latter, which project between some of the rake-teeth, move downward as the said teeth move up-  
 45 ward, and knock the hay off the same into the windrow. When the rake-head is down, the thickest part of each eccentric sleeve  $b$  is in the rear part of the hub-opening. As the rake-head is raised, the said thickest part rises so as to be vertically above the end of the axle  
 50 B, the thinnest part of the sleeve being consequently below the same. As the rake-head falls, the thickest part of the sleeve, turning around the axle B, and in the opening of the wheel-hub, acts as a wedge therein to retard  
 55 the force of the fall and lessen the jar of the same. When the rake-head rises, as in dumping, the axle B descends in the wheel-hub, and all the weight of the main frame, as it is supported by the axle, will aid in the motion, and  
 60 as the driver is also supported by the axle his weight will also assist.

Having thus described my invention, what I desire to secure by Letters Patent is—

1. In a horse hay-rake, the combination, 65 with the axle B, wheels  $b'$ , main frame A, frame D, and bar L, carrying the cleaning-teeth, of the lever  $k^2$ , link-rod  $k$ , plate K, and eccentric sleeves  $b$ , substantially as specified.

2. In a horse hay-rake, the combination, 70 with the main frame, frame D, carrying the rake, and bar L, carrying the cleaning-teeth, of the plate K, link-rod  $k'$ , lever  $k^2$ , and spring-bar X, substantially as specified.

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

GEORGE ELMER ROBISON.

Witnesses:

JAMES CARPENTER,  
 RALPH R. KEELER.