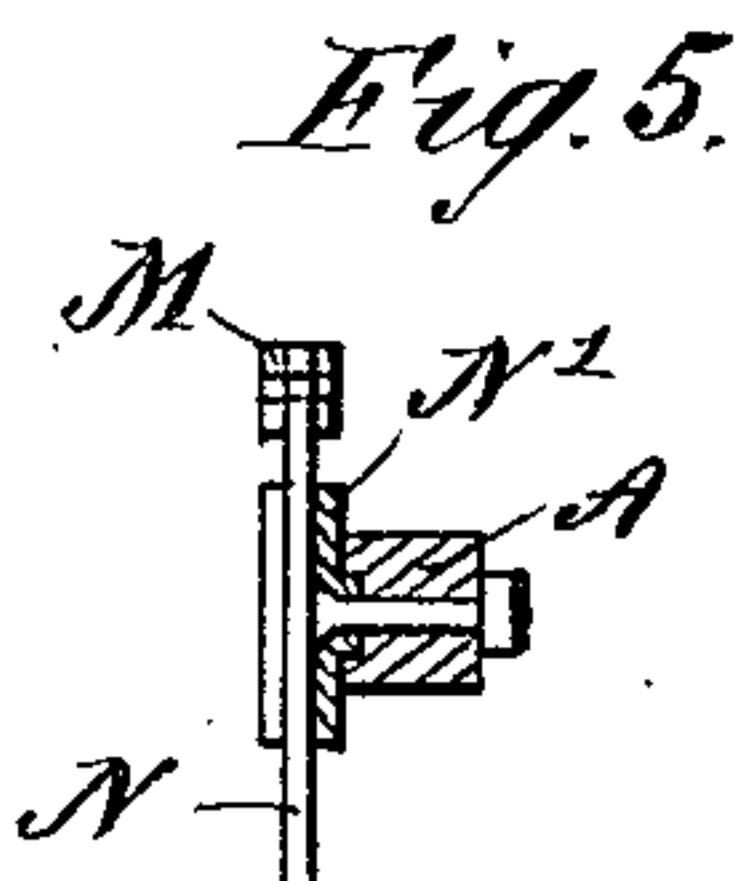
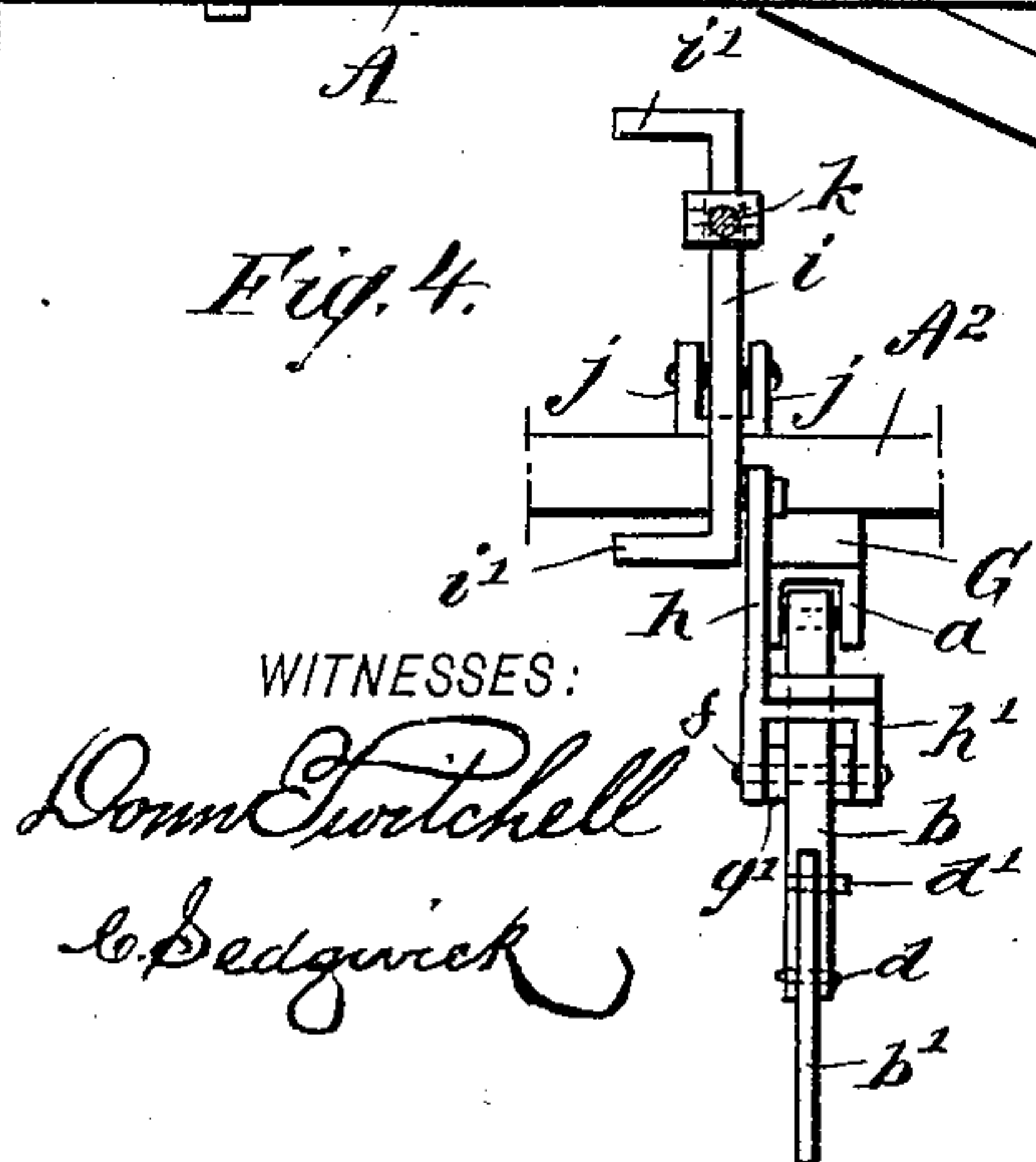
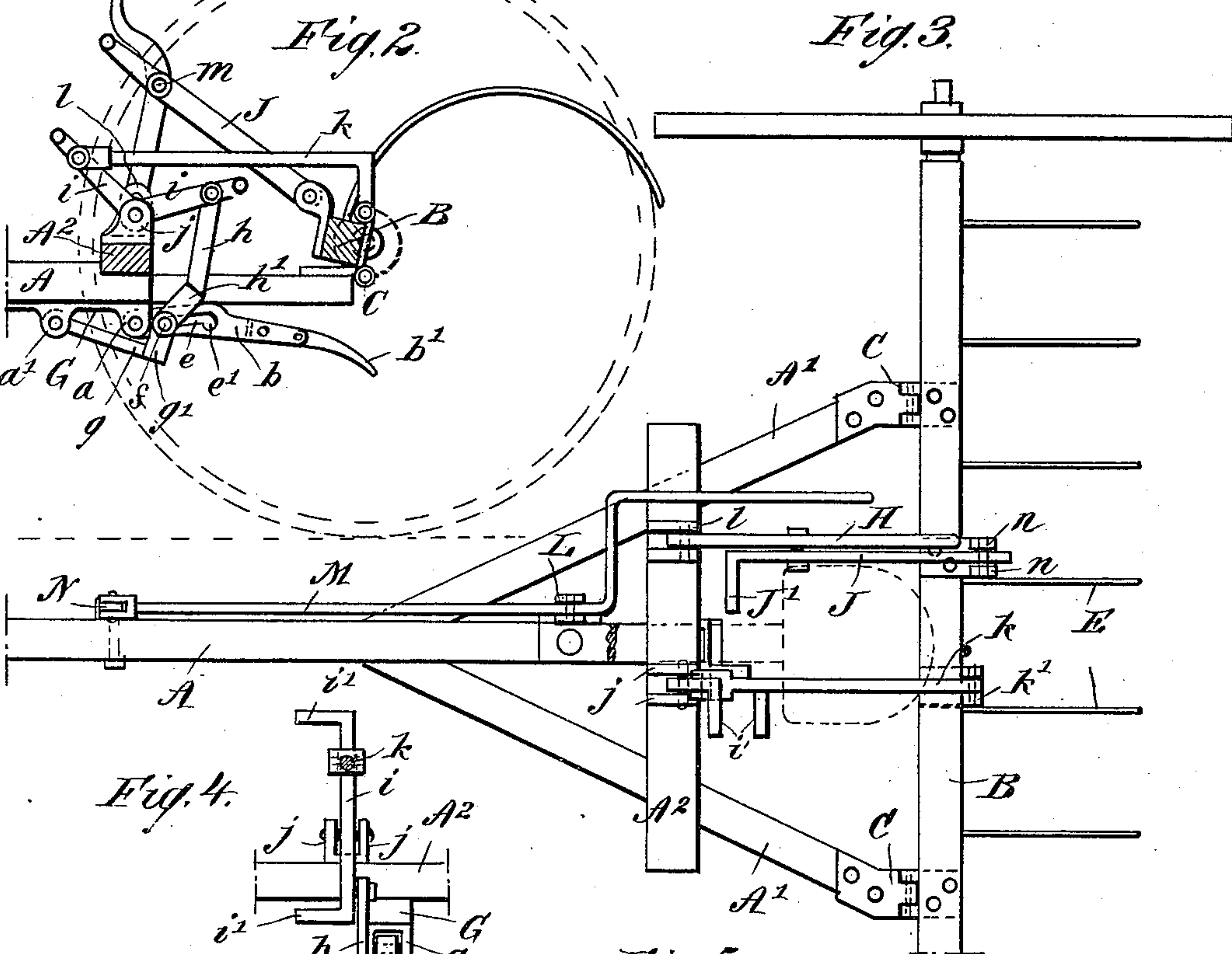
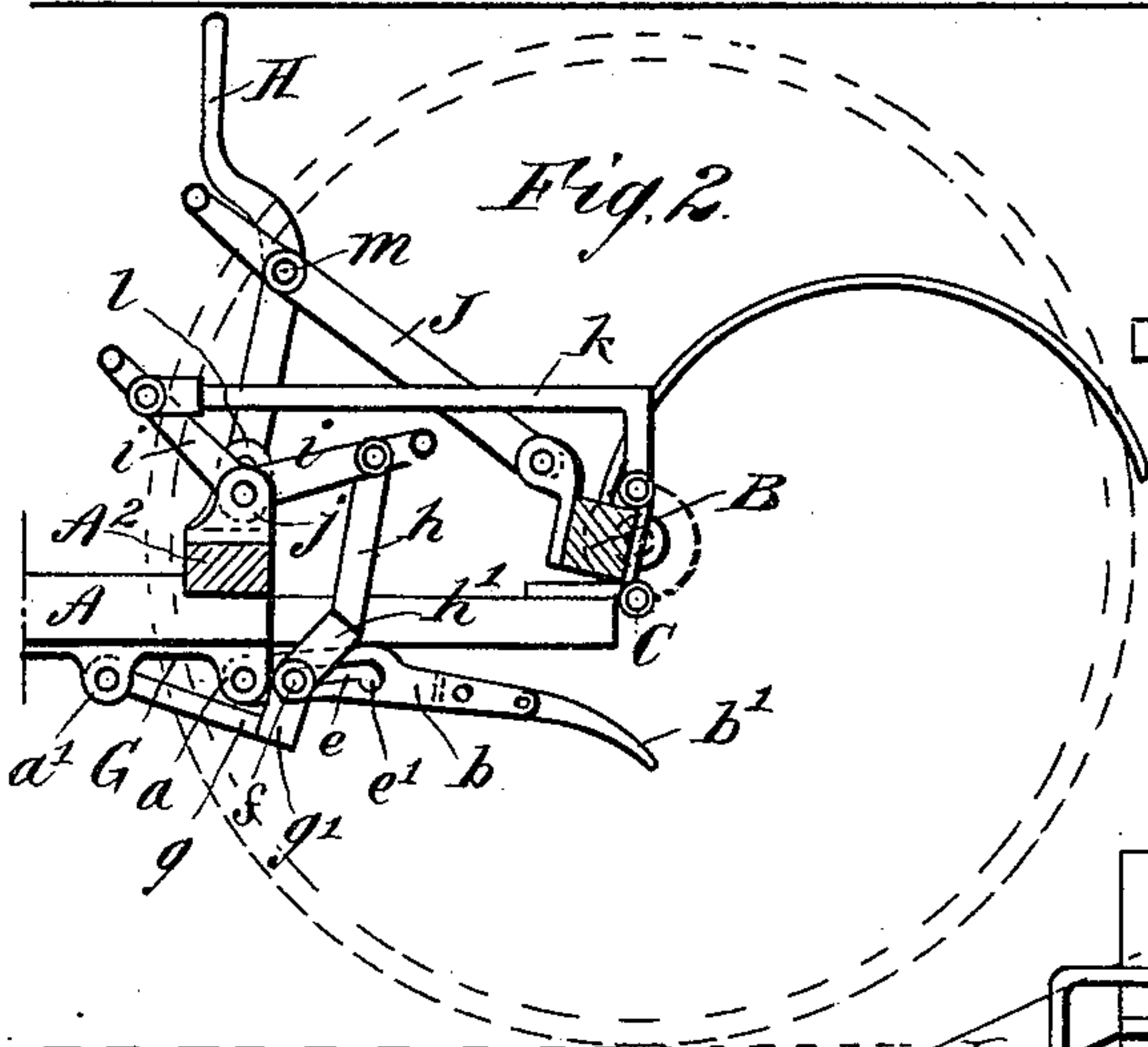
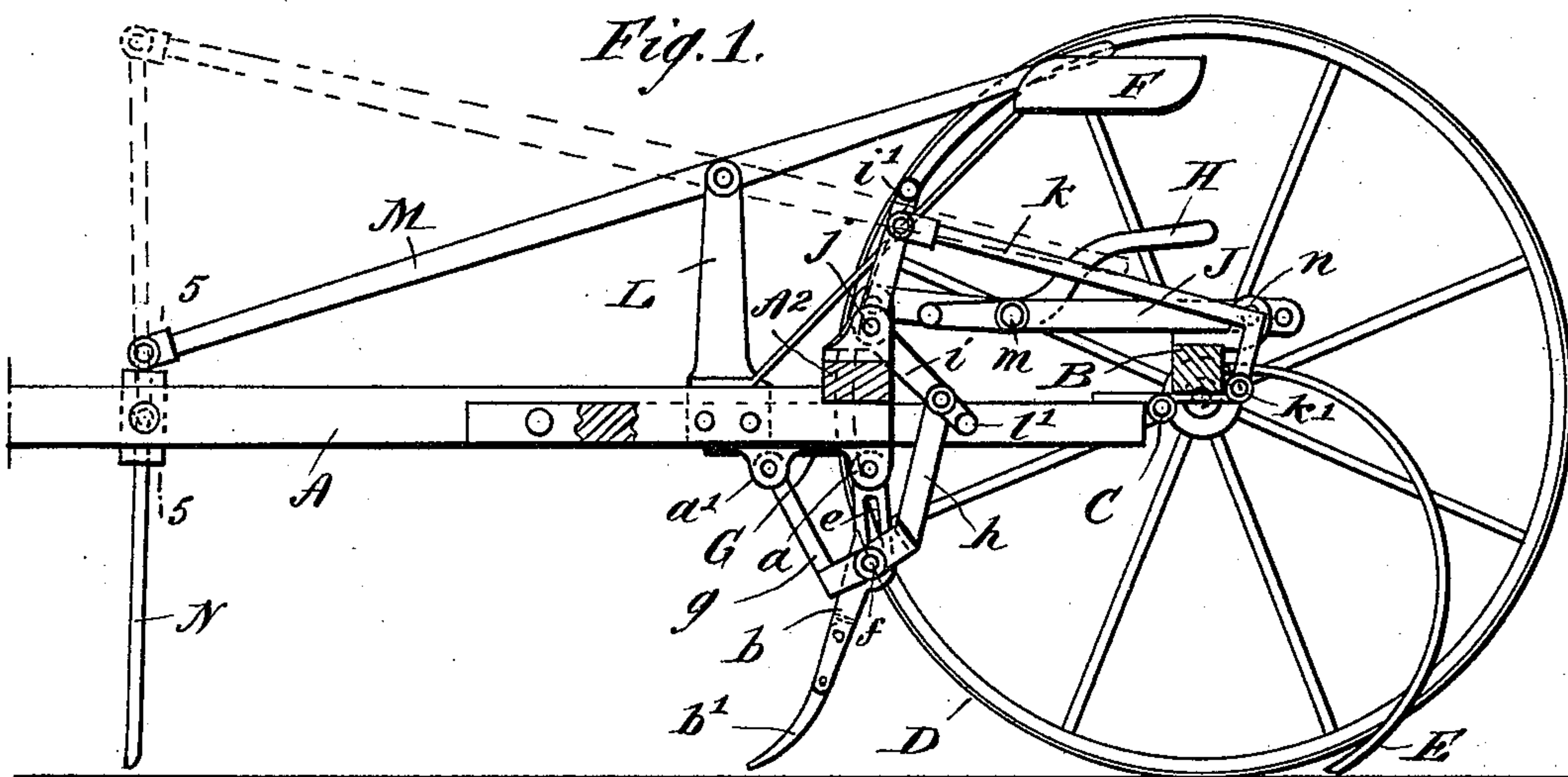


(No Model.)

B. W. HARMER.  
HORSE HAY RAKE.

No. 441,552.

Patented Nov. 25, 1890.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

BARTON W. HARMER, OF AVOCA, NEBRASKA.

## HORSE HAY-RAKE.

SPECIFICATION forming part of Letters Patent No. 441,552, dated November 25, 1890.

Application filed March 18, 1890. Serial No. 344,345. (No model.)

*To all whom it may concern:*

Be it known that I, BARTON W. HARMER, of Avoca, in the county of Cass and State of Nebraska, have invented a new and Improved Horse Hay-Rake, of which the following is a full, clear, and exact description.

My invention relates to improvements in that class of horse hay-rakes in which the rake-teeth are attached to and depend from a rocker bar or axle; and the object of my invention is to provide the rake with an attachment by means of which the hay after being raked into windrows may be quickly and easily dragged, swept, or slid to the place where the stack is to be formed.

My invention also consists in a system of levers by which the rake-teeth and cocking attachment may be simultaneously operated, said levers being arranged in such a manner that the parts will be held in proper position by the weight of the driver.

To this end my invention consists in certain features of construction and combinations of parts, that will be hereinafter fully described, and specifically pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a vertical longitudinal section of the rake with the rake-teeth and drag or sweep-tooth in position upon the ground. Fig. 2 is a vertical section of the same with said parts in an elevated position; Fig. 3, a broken plan view of the rake; Fig. 4, a detail view of the levers for operating the dragging or sweeping attachment, and Fig. 5 a cross-section on the line 5 5 of Fig. 1.

The tongue A, having the braces A' and cross-piece or brace A<sup>2</sup>, is pivotally attached to the rocker-axle B by the hinges C in the usual manner, and the axle is supported upon the wheels D, and has the depending curved teeth E attached thereto, as in ordinary rakes of this type. It is also provided with the usual seat F, which is suitably supported upon the tongue.

Attached to the under side of the tongue A near the rear end thereof is a plate G, having depending lugs a a' formed in pairs thereon, and pivoted between the rear lugs a is a

depending tooth b, having a bifurcated lower end, in which is fixed the point b' by the pins d and d', which pass through the point and tooth. The pin d is of metal, and the pin d' is of wood, so that the point will pass through a soft obstruction, such as a sod; but if the point strikes a solid obstruction—such as a root or stone—the wooden pin d' will break and allow the point to swing on the pin d, thus saving the other parts of the machine.

In the upper part of the tooth b is a vertical slot e, having an enlarged portion e' at the bottom, in which the pin f rests when the tooth b is in a depending position and partially locks the same.

Pivoted at the upper portion of the tooth b by the pin f are the two links g and h, each having a bifurcated end g' and h', respectively, one of which fits within the other, and through which the pin f passes. The link g extends forwardly and is pivoted at its forward end between the lugs a', and the link h extends upwardly and is pivoted to the lower arm of the bent lever i, which is pivoted between the lugs j on the upper side of the cross-piece A<sup>2</sup>. Each arm of the lever i is provided at its terminal end with a foot-piece i', and the upper arm is pivotally connected with the angled connecting-rod k, which extends rearwardly therefrom and is pivoted to the lugs k' on the lower edge of the rear side of the rocker-axle B, so that when the pressure is applied to the upper tread i' of the lever i the lever will be tilted, the upper arm will be forced forward and depressed, and the lower arm will be raised, and this latter arm acting on the link h, pin f, and tooth b will swing the tooth upwardly and rearwardly. At the same time the connecting-rod k will be pulled forward, and this will tilt the axle B and raise the rake-teeth E. The parts may be also operated by the hand-lever H, which is pivoted at the foot between the lugs l on the top of the cross-piece A<sup>2</sup>, and which, after extending nearly in a horizontal position rearwardly, is curved upwardly, that it may be easily reached. The lever H is pivotally connected by the pin m with the lever J, the rear end of which is pivoted between the lugs n, which are fixed to the rocker-axle B and the forward end of which is formed into a foot-piece or tread J', by which the lever may, if necessary, be forced



down into position. The levers H and J are pivoted together in such a manner that when the teeth of the rake are upon the ground the pin *m* will be below a center line drawn from the lugs *l* to the lugs *n*, so that the weight of the driver upon the seat F will hold the parts in position, and when the teeth are elevated the pin *m* will be so far forward that the levers cannot tip back, and the weight of the driver will hold them in this position, so that no locking device is needed.

Pivoted in the top of the vertical arm L, which is fixed to the tongue A, is a long lever M, which extends rearwardly to a point where it may be easily reached by the driver, and which extends forwardly in line with the tongue and has pivoted to its forward end the rod N, which moves vertically in the slide N', which is bolted to the side of the tongue A. The rod N may thus be raised and lowered, as indicated by the dotted lines in Fig. 1, and the object of the rod is to enter a quantity of hay that is being dragged, swept, or slid and prevent it from working to either side of the machine.

The machine is used to rake hay in the usual manner, the rake-teeth E being lifted to clear them from hay by the lever H or the lever *i*, as described. When the hay has been raked into windrows, the machine is drawn lengthwise along the same, with its rake E and rod N elevated and the tooth *b* lowered. As soon as enough hay has accumulated in front of the tooth *b* the rod N is forced down in front thereof, so that the mass of hay will be prevented from being accidentally displaced while being dragged, swept, or slid to the place of stacking. The mass may be dumped or discharged by raising the drag rod and tooth therefrom. I find the combination of a drag, slide, or sweep with a hay-rake to be a very useful one in practice, as the same machine may be used for both purposes by merely raising the drag or the rake, as occasion may require, and the use of a separate drag, sweep, or slide is obviated.

The terms "drag," "sweep," or "slide" are synonymous and do not refer to alternate constructions. The drag, slide, or sweep in the present instance is composed of the tooth *b* and the rod N, between which the hay is held

while being conveyed to the place of stacking.

It will be observed that the tooth *b* and teeth E may be operated by either the lever H and its connections or the lever *i* and its connections. I do not, however, confine myself to the precise arrangement of the operating-levers, as they may be greatly changed without departing from the principle of my invention.

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

1. The combination, with a horse hay-rake, of a drag, slide, or sweep mounted in advance of the rake-teeth to convey the hay to the place of stacking and means for raising the said drag, slide, or sweep, substantially as set forth.

2. The combination, in a horse hay-rake, of a tooth pivoted to the tongue and extending to the ground, means for raising and lowering said tooth, a vertically-movable rod attached to the tongue in front of said tooth, and a lever for raising and lowering said rod, substantially as described.

3. The combination, in a horse hay-rake, of a tooth pivoted to the tongue and extending to the ground and a lever-connecting mechanism for simultaneously raising said tooth and the rake-teeth, substantially as described.

4. The combination, with the tooth *b*, pivoted to the tongue A, as shown, and having a slot *e* in the upper part thereof, of the links *g* and *h*, pin *f*, and lever *i* for actuating said tooth, substantially as described.

5. The combination, with the slotted tooth *b*, pivoted to the tongue A, as shown, of the links *g* and *h*, a pin *f*, connecting the adjacent ends of said links and passing through the slot in the said tooth, the lever *i*, the rocker-axle B, having teeth E attached thereto, the rod *k*, connecting said axle and lever, and the levers H and J, pivoted together, as shown, and connected with the axle and rake-frame, so that the tooth *b* and teeth E may be simultaneously operated, substantially as described.

BARTON W. HARMER.

Witnesses:

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C. A. KAUFMAN.