(No Model.)

S. H. BUSHNELL.

Horse Hay Rake.

No. 229,864. Patented July 13, 1880.

Fig. 1.

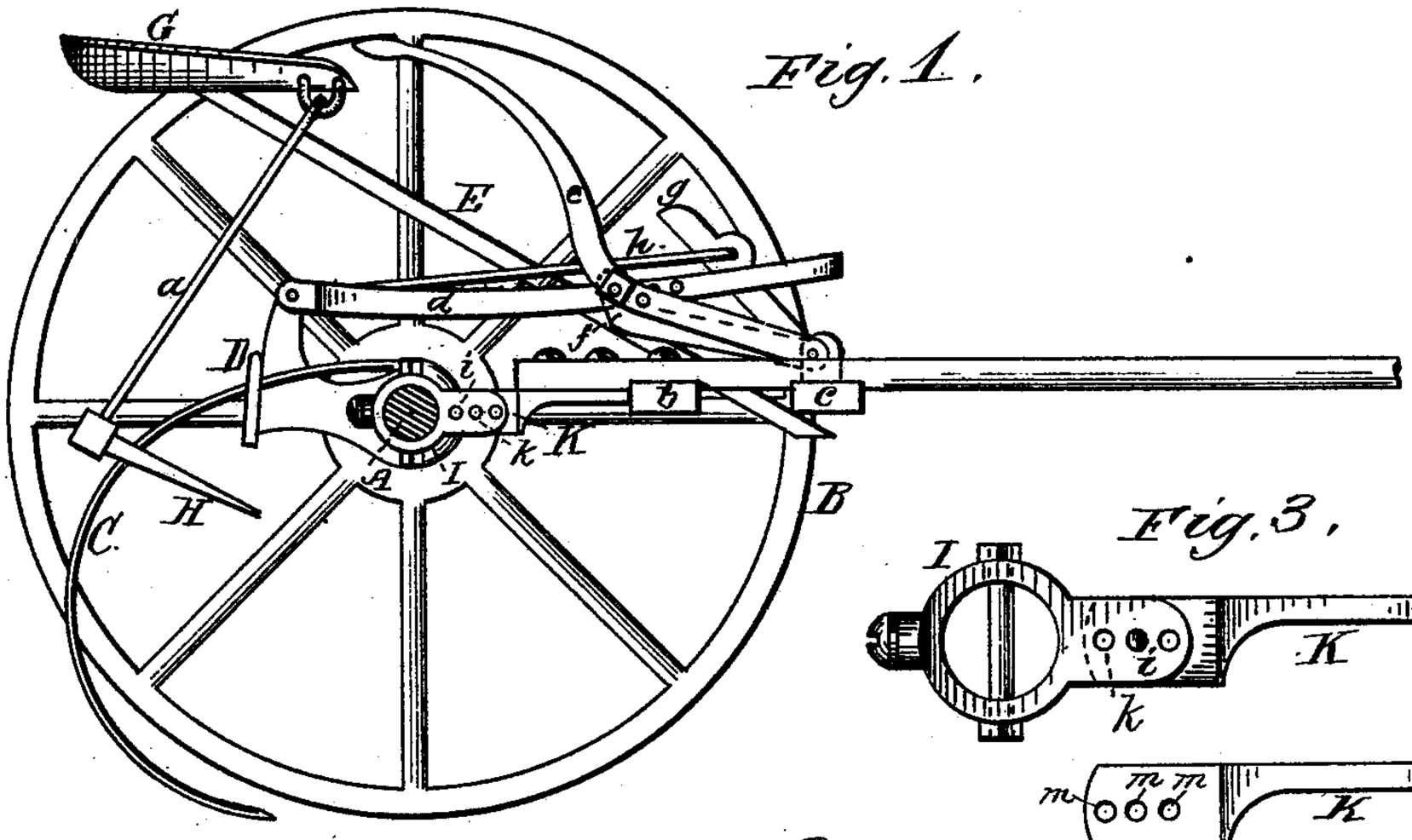
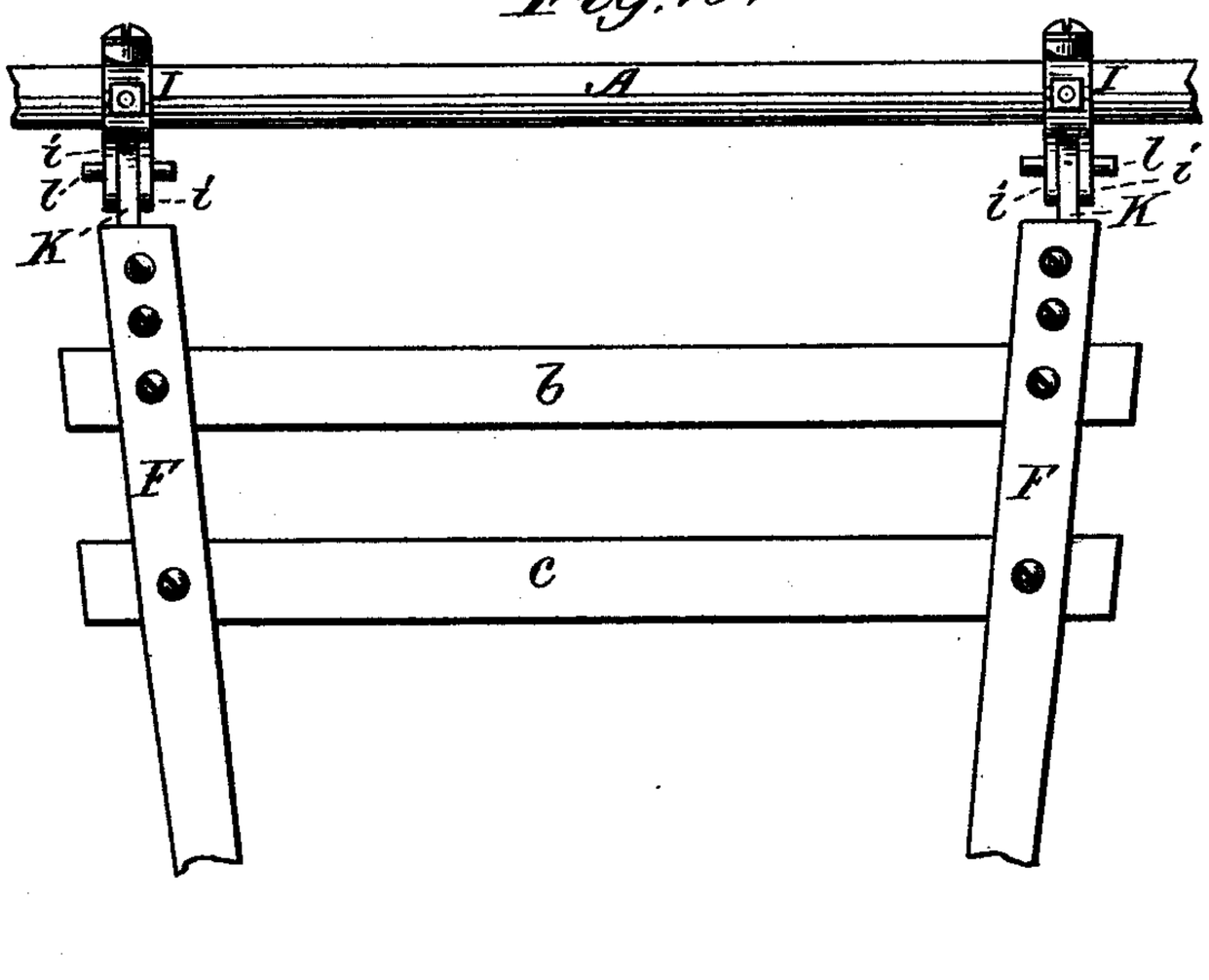


Fig. 3.

Fig. 2.



Witnesses

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UNITED STATES PATENT OFFICE.

SOLON H. BUSHNELL, OF FAIRPORT, NEW YORK.

HORSE HAY-RAKE.

SPECIFICATION forming part of Letters Patent No. 229,864, dated July 13, 1880.

Application filed April 5, 1880. (No model.)

To all whom it may concern:

Be it known that I, SOLON H. BUSHNELL, a citizen of the United States, residing at Fairport, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Horse Hay-Rakes; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a side elevation of a horse hay-rake embodying my improvement. Fig. 2 is a detailed plan view of the draft-frame and axle, showing the manner of connecting them together; and Fig. 3 is a detailed view of the collar with lugs and the thill-iron.

This invention is designed as an improvement on my patent of June 24, 1879, No. 216,829; and the object thereof is to provide means whereby the leverage is adjusted to accommodate the weight or heft of the driver upon the seat without the necessity of the displacement of any of the levers or changing the position of the thills or draft-frame with relation to the axle.

Previous to my invention this adjustment of the leverage, in order to balance the weight of the driver upon the seat, was accomplished by bringing the rear ends of the thills or draft-frame nearer to or farther away from the axle. This adjustment or change of position of the thills or draft-frame with relation to the axle resulted in a slack in the levers, which allowed the teeth to pass too far forward out of raking position, and in order to get the teeth in a raking position means had to be provided whereby this slack was taken up.

The above means of adjusting the leverage was to a certain extent impracticable as well as complicated and liable to get out of order.

The above objections are entirely overcome by simply changing the pivotal bearing of the draft-frame and axle without changing the position of the draft-frame with relation to the axle, thereby entirely avoiding the slack in the levers and rendering it unnecessary to provide means for taking it up, as the rake-teeth are never changed in making the alteration from light to heavy persons.

The means employed for carrying out my invention are those substantially as shown in the drawings, and hereinafter described.

In the accompanying drawings, A represents the axle, to which are connected the wheels B and rake-teeth C, said teeth passing through elongated openings in a frame, D, secured to the axle by suitable brackets.

A seat-board, E, is secured to the cross-bars *b c* of the draft-frame, said frame consisting of the cross-bars and the shafts F. The board E has connected to its upper end a seat, G, the latter being connected to a clearer-bar, H, by rods *a*. The frame D is connected with a system of hand and foot levers, *d e f g h*, for operating the rake-teeth, these levers being the same in construction, arrangement, and operation as those shown and described in my former patent, and therefore any further description of them is deemed unnecessary, as my invention is principally in the manner of connecting the draft-frame to the axle.

The axle A has secured to it, by set-screws, bolts, or other suitable means, collars I, formed with lugs *i*, having a series of holes, *k*. Between these lugs are held the thill-irons K, which are secured, by bolts or other suitable means, to the rear end of the shafts F, the thill-irons being held between the lugs by pin or bolt *l*, which passes through the holes *k* and a corresponding hole, *m*, in the thill-iron.

In place of a single hole, *m*, in the thill-iron K, a series of holes are formed, in number to correspond with the number of holes *k* in the lugs *i*. Now, when the rake is set up and adjusted for work—for instance, for a boy or light person—the pins or bolts *l* are in the front holes, which gives the greatest amount of leverage by the heft of the driver upon the seat. Should the adjustment be required for a heavy person to do the raking, the pins or bolts are withdrawn and placed in the rear or back holes. It should be noticed that this adjustment does not change the relative position of the draft-frame with the axle, as the draft-frame is not moved in the least whatever, the pins or bolts *l* simply being changed from one hole to another without affecting the levers by making them slack or changing the raking position of the teeth. This, however, would not be the case were the thill-irons K provided with a single

hole only, the result being that the draft-frame would have to be moved nearer to or farther from the axle to make the adjustment; or, in other words, the thill-irons would of necessity have to be moved so that the hole therein will register with the proper one in the lugs *i* to admit of the pin or bolt being inserted.

By this construction and manner of connecting the draft-frame to the axle the difference in the degree of the weight of the driver upon the seat is compensated for, thereby insuring a more effectual and easy operation of the rake-teeth in elevating and discharging the load.

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

In a horse hay-rake, the axle A, having secured thereto collars I, formed with lugs *i*, having holes *k*, in combination with the draft-frame provided with thill-irons K, having a series of holes, *m*, whereby the pin or bolt *l* may be withdrawn and inserted in any one of the series of holes *k* without changing the relative position of the draft-frame with the axle, substantially as and for the purpose set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

SOLON H. BUSHNELL.

Witnesses:

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B. T. BUTLER.