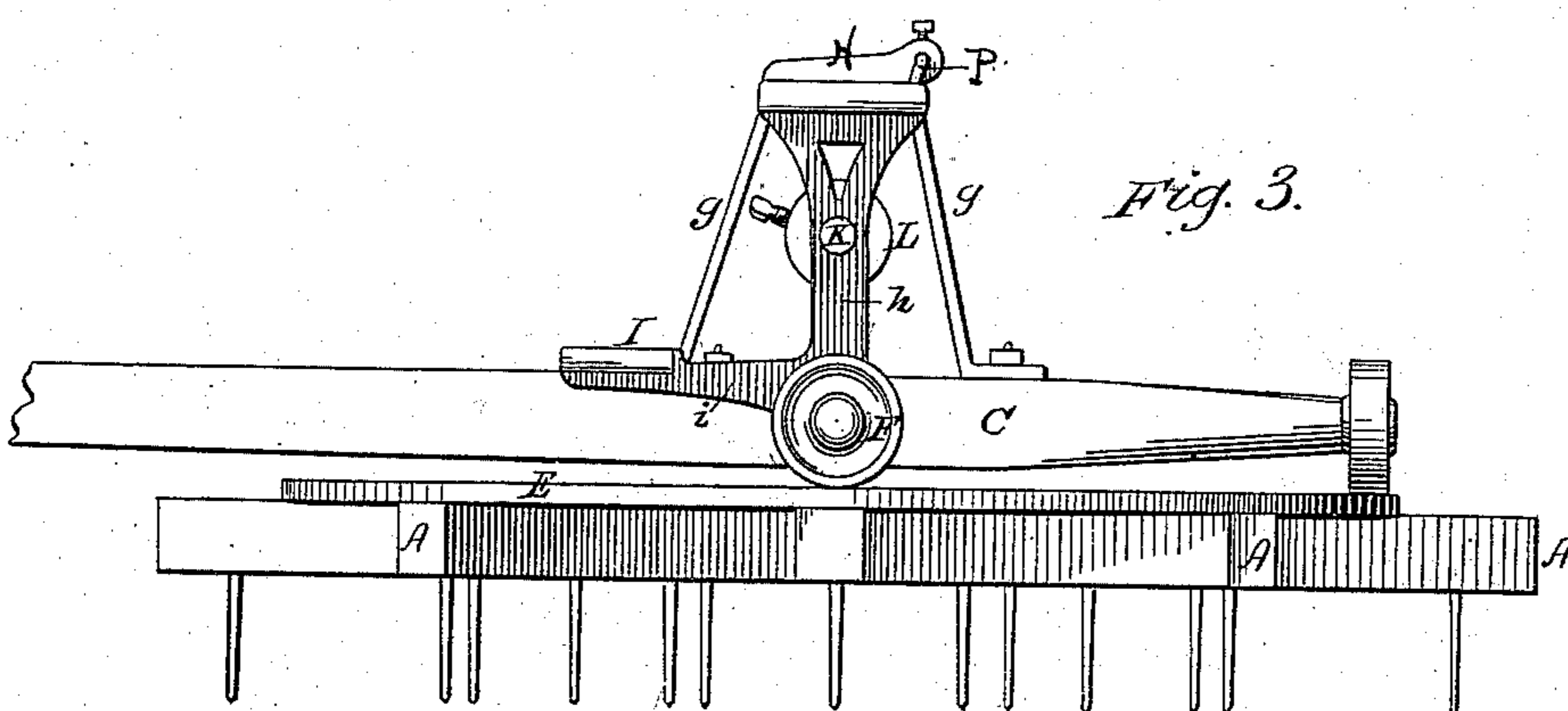
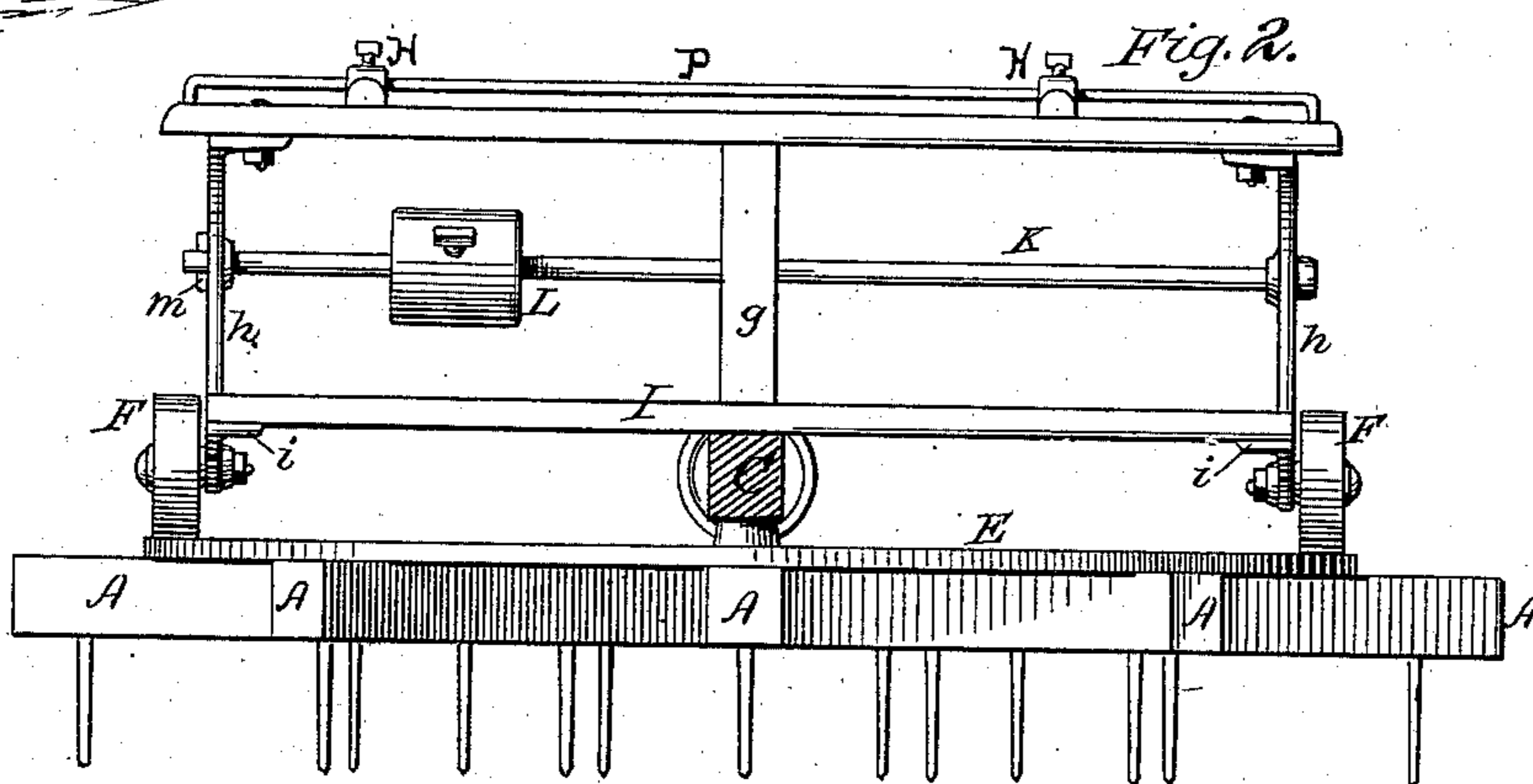
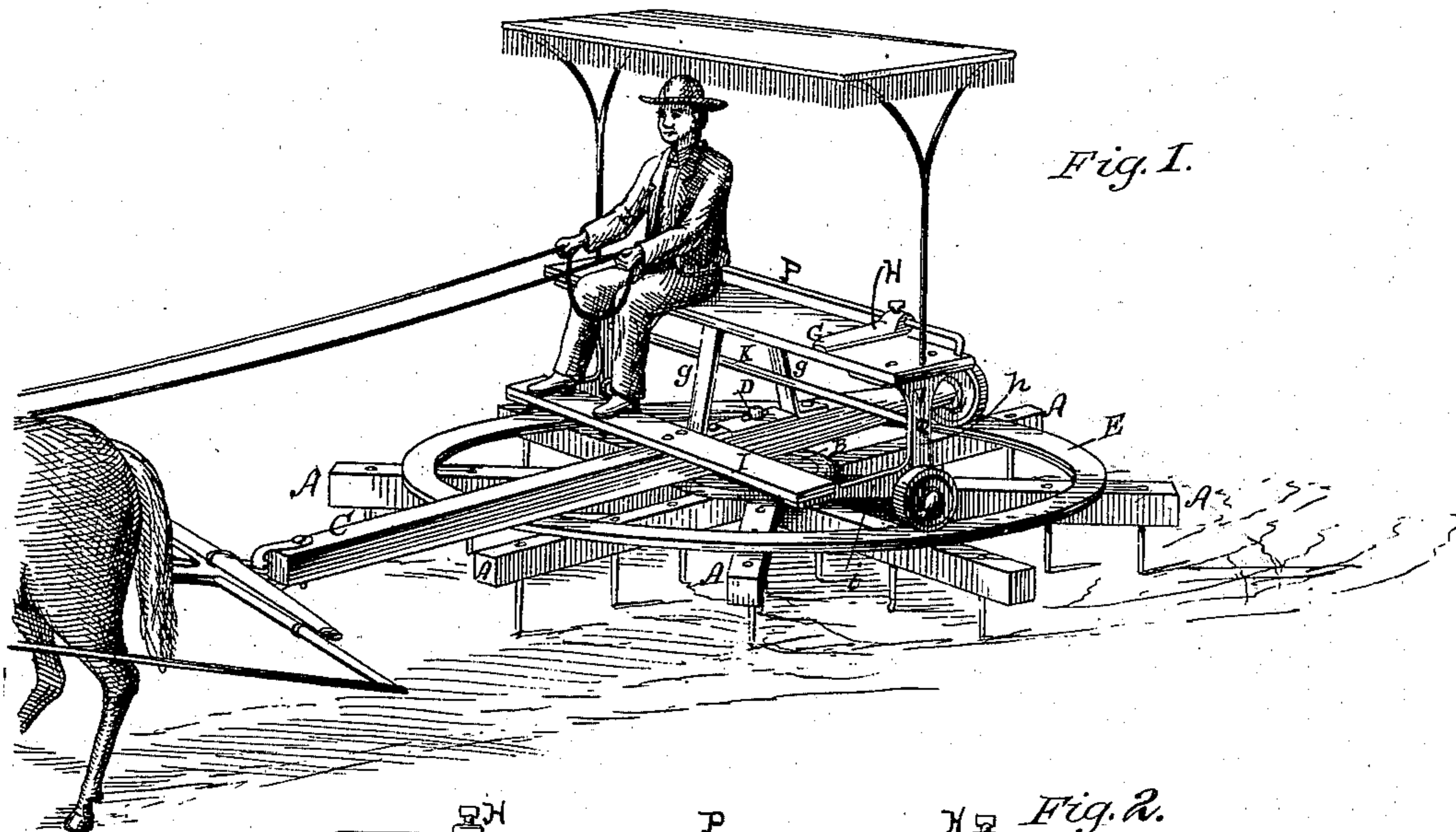


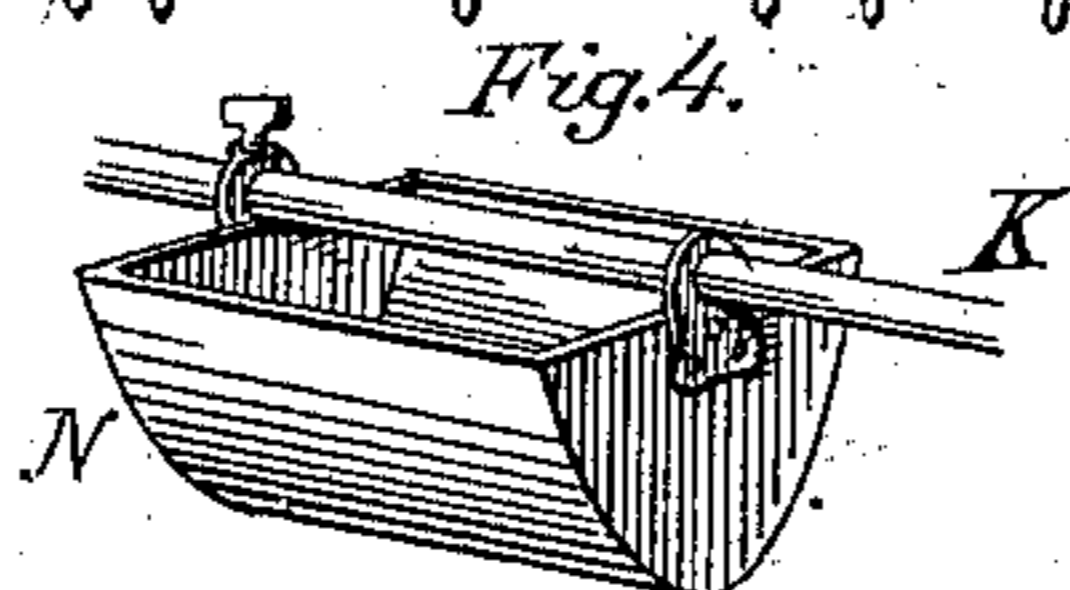
H. H. MONROE.
Rotary Harrow.

No. 229,267.

Patented June 29, 1880.



WITNESSES:
C. Clarence Poole
R. D. Smith



INVENTOR:
H. H. Monroe

UNITED STATES PATENT OFFICE.

HALSEY H. MONROE, OF THOMASTON, MAINE.

ROTARY HARROW.

SPECIFICATION forming part of Letters Patent No. 229,267, dated June 29, 1880.

Application filed February 25, 1880.

To all whom it may concern:

Be it known that I, HALSEY H. MONROE, of Thomaston, Knox county, Maine, have invented a new and useful Improvement in Rotary Harrows; and I do hereby declare that the following is a full and exact description of the same.

Heretofore rotary harrows have been provided with eccentric weights arranged to press upon the outer periphery, so as to cause the teeth upon the weighted side to penetrate more deeply than the teeth upon the unweighted side, and thus produce different resistances upon the two sides and a consequent revolution of the harrow as it advances. The peripheral weight has been placed upon an arm pivoted upon the center or draft bar, so that it could be transferred from one side to the other, so as to cause the harrow to revolve in either direction desired, and an additional adjustable weight has also been placed upon the weighted arm, so that more or less differential resistance might be produced as occasion required. A seat for a driver has also been placed eccentrically upon a rotary harrow. These improvements fill the general requirements of harrows of this class, but not in a way entirely satisfactory, because it is very frequently necessary or desirable to quickly transfer said weight to the opposite side, so as to cause the reversal of the rotation of the harrow. This necessity occurs when some obstruction is in the path of the harrow, over which it will pass with the teeth on that side relatively traveling toward the rear, and it also occurs when the ground is uneven or sloping, first toward one hand and then toward the other, for it is necessary that the downhill side should be the weighted side; otherwise the harrow will move obliquely from the line of draft toward the lower ground.

As heretofore arranged, the reversal of the weight requires the stoppage of the team while the reversal is being effected.

My present improvement renders it easy to increase or diminish the peripheral weight at any moment without difficulty and without stopping the machine, and equally easy to shift the weight to the opposite side, so as to reverse the motion of the harrow; and it principally consists in a long seat mounted upon

the draft-beam over the center of the harrow, and resting on either end upon the peripheral ring of the harrow. Upon this seat a boy or light person may ride, and by transferring his weight from point to point may govern the motion of the harrow. By this means the government of the harrow is not only rendered greatly more convenient and complete, but a boy is enabled to do work which heretofore has required the services of a man.

That others may fully understand my improvement, I will more particularly describe it, having reference to the accompanying drawings, wherein—

Figure 1 is a perspective view of my harrow in operation. Fig. 2 is a front elevation of the same. Fig. 3 is a side elevation of the same. Fig. 4 is a perspective view of the auxiliary adjustable weight-pan.

A A are the radial arms of an ordinary rotary harrow, and B is the center pivot-plate of the same. C is the draft-beam, to which the rotary harrow A is attached by the pivot-bolt D.

The peripheral ring or track E supports the outer ends of the arms A, and constitutes, also, a track for the friction-wheels F F at the outer ends of the seat G.

The seat G is mounted at its center upon legs *g g*, which are bolted to the draft-beam C at the point where the center-bolt D penetrates, and at each end of said seat there is a bracket or standard, *h*, bolted to the seat and extending downward nearly to the ring E, where it is provided with a spindle for the wheel F, which travels upon the track E when the weight is upon that side.

It is necessary to provide a foot-rest for the driver, and for that purpose the board I is placed across the beam C in front of the seat G, and is secured to said beam at its middle, while the ends may be supported by arms *i i*, extending horizontally from the lower ends of the standards *h*, or in any other suitable manner.

The manner of operation is sufficiently explained in the preamble.

It will sometimes happen that a riding attendant cannot be procured, (for such an attendant must be light of weight,) or the attendant may be too light in weight, and at

such times a permanent weight must be substituted or used as auxiliary. For convenience in this respect I place a rod, K, from standard *h* to standard *h*, beneath the seat, and a sliding adjustable weight is placed thereon, and may be fixed at any required point to secure the desired preponderance of weight.

The rod K may be secured by a head at one end, and a key, *m*, at the other, so that by removing said key and slipping said rod endwise the weight may be removed or replaced; or any other proper means for securing said rod may be employed.

The solid weight L has been heretofore used, as hereinbefore indicated, and is effective. For the purposes of my present improvement it will be more or less inconvenient to remove said weight when it is not required; and I therefore propose to substitute an adjustable pan, N, into which sand, earth, or other convenient material may be placed in such quantity as may be desired. This device has the advantage of capacity to be loaded at any time or place, and of being unloaded with equal facility by simply turning it over so as to dump the contents. The pan need never be detached, and if worn out or otherwise disabled may be replaced at small cost.

The adjustable weight hereinbefore referred to is not at all times required, and when not required it is removed from the machine. If the same is a solid metallic weight, as is generally the case in practice, the removal and replacement of this weight, together with the care of it when removed, and the fact that it is frequently not at hand when required, incurs a variety of inconveniences which are entirely obviated by the use of the pan N. It is manifest that said pan may be substituted for the adjustable weight on all those harrows which have a weighted arm extending from the center only to the periphery at one side, and that thereby all inconvenience attending the use of the solid weight will be avoided.

Whenever the harrow is moving overground which is sloping in a direction transverse to the line of advance gravity, aided by the jar and tremulousness of the machine during operation, will cause the driver to constantly slide along the seat toward its lower end. The consequence will be a constant effort on his part to resist said tendency to slide, and also a constant overloading of the weighted side of the harrow. To obviate these effects I have placed adjustable cleats or stops H upon the

seat, which, being adjusted so as to mark the lower edge of the seat, not only serve to so mark it, but also to prevent the driver from sliding down toward a lower level.

The stop may be composed of an arm, H, mounted to slide upon the rod P, which extends along the seat G, preferably in the rear thereof. The pieces H may be fastened at any point by a set-screw or other suitable device, or by the cramping action of the piece itself upon the rod P when pressure is brought against it.

It is evident the stops H may be attached otherwise than upon the rod P and still serve the same purpose, and I therefore do not limit myself to the use of said rod.

Having described my invention, what I claim as new is—

1. A rotary harrow provided with a long seat extending across its center, and from the periphery on one side to the periphery at the other side, so that an attendant seated thereon may, by selecting his position upon said seat, regulate at will the eccentric-weight upon the harrow to cause its revolution, as set forth.

2. The rotary harrow A, provided with the long seat G, supported upon the draft-beam at its center, combined with the standards *h h*, wheels F F, and track-ring E, for the purpose set forth.

3. The seat G and foot-board I, combined with the elbow-standards *h i h i* and the rollers F F, traveling on the ring E of the rotary harrow A.

4. The harrow A and long seat G, mounted across its center, combined with the rod K, extending lengthwise beneath said seat to receive the auxiliary adjustable weight, as set forth.

5. The revolving harrow A, provided with an arm or rod, K, combined with the adjustable pan N, hung upon said rod, to be loaded or unloaded, as occasion may require, as and for the purpose set forth.

6. The long seat G of the harrow A, combined with adjustable stops H, which may be changed in location, for the purpose set forth.

7. The long seat G of the harrow A, combined with the rod P and the stops H sliding thereon, so as to be adjustable to any point along said seat, as set forth.

HALSEY H. MONROE.

Witnesses:

R. D. O. SMITH,

C. CLARENCE POOLE.