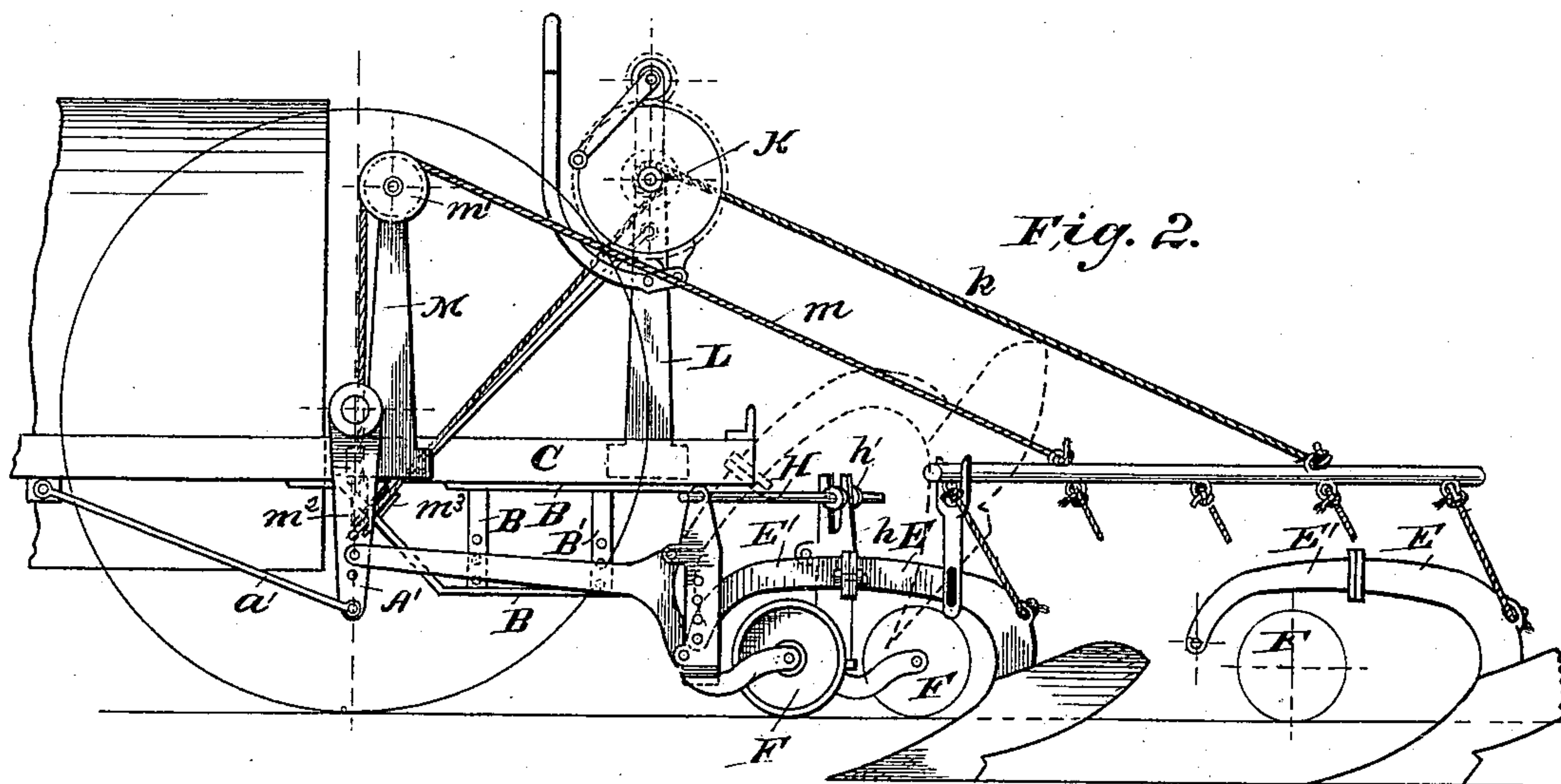
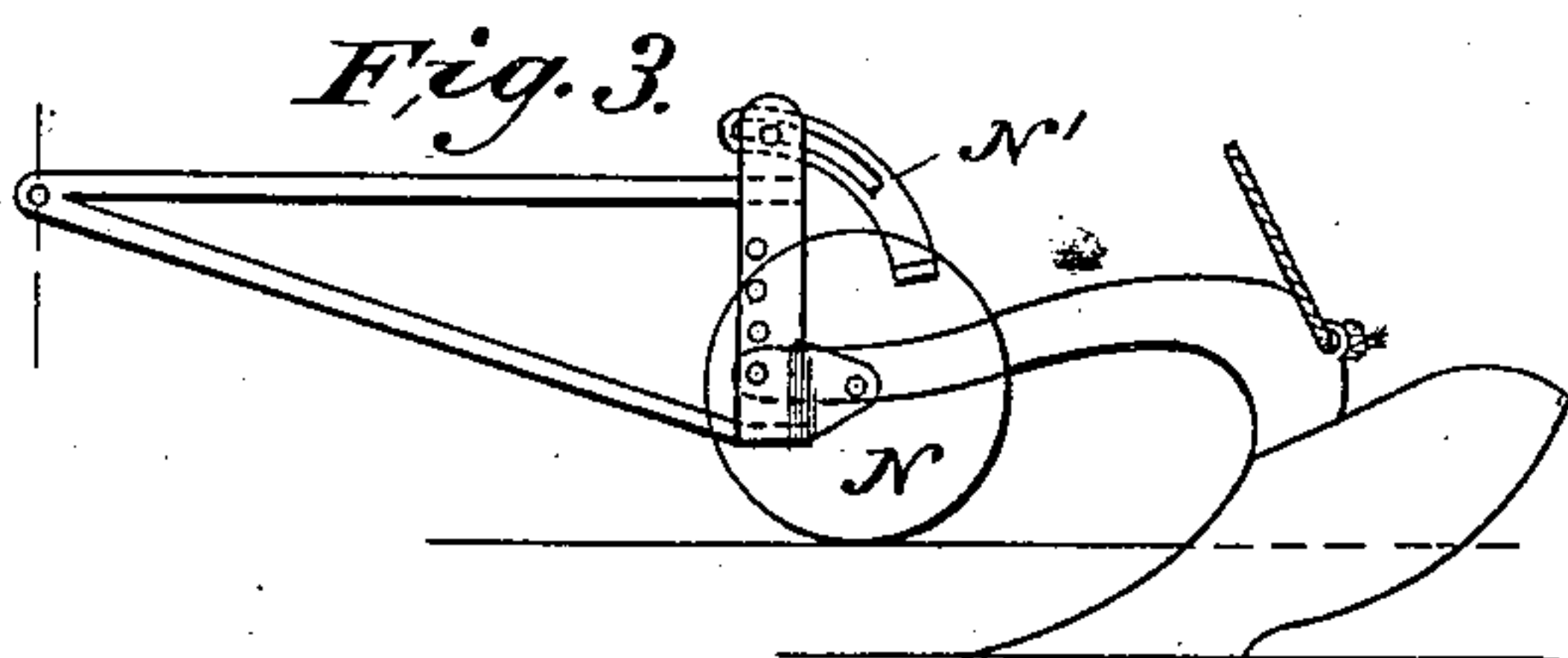
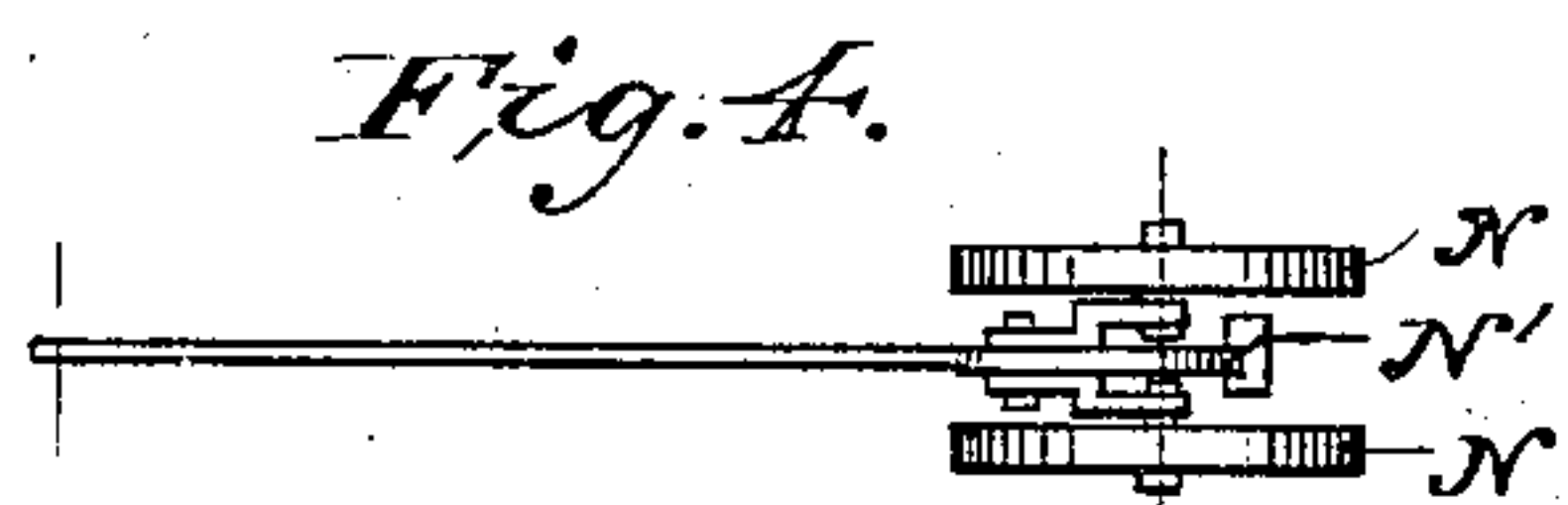
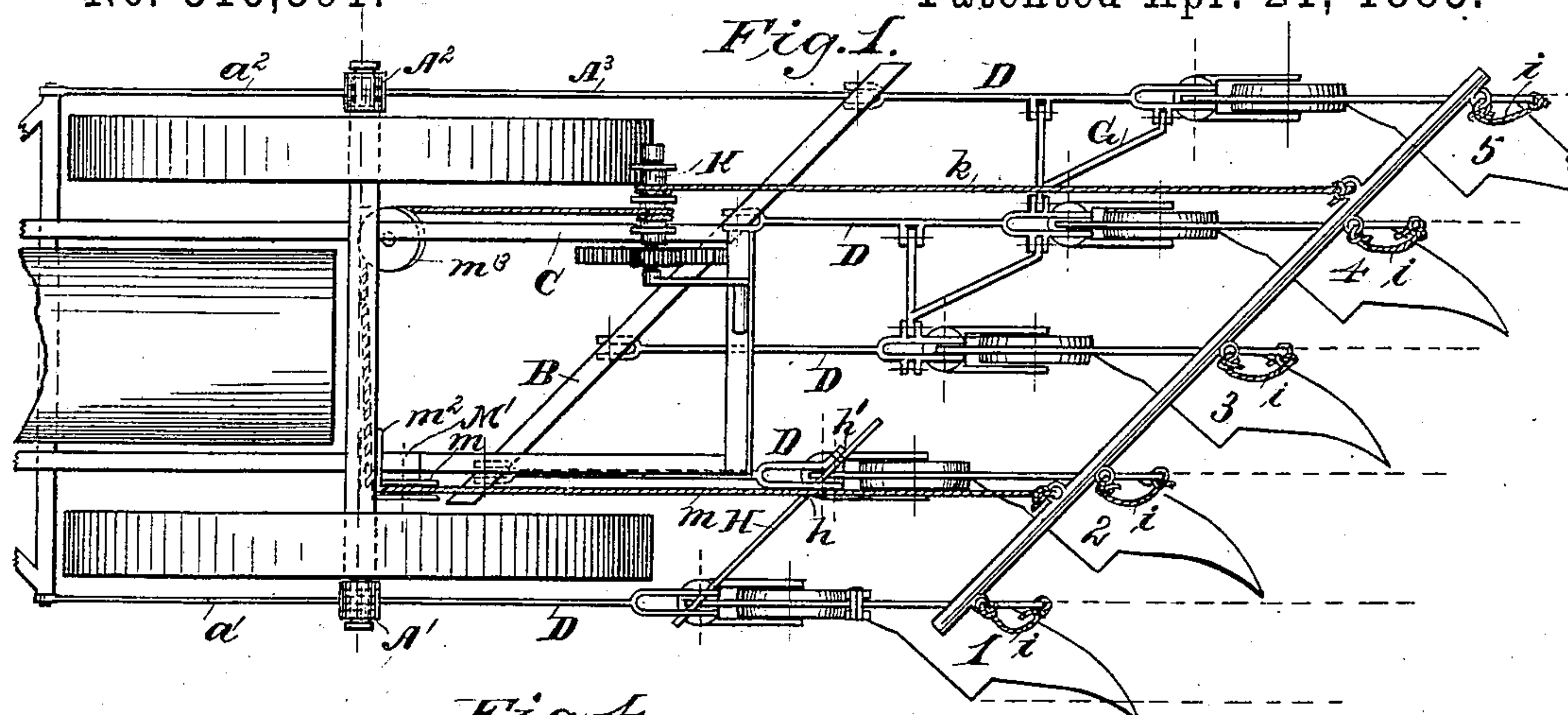


(No Model.)

E. PENNEY.  
STEAM GANG PLOW.

No. 316,391.

Patented Apr. 21, 1885.



Witnesses:  
E. J. Walker  
W. W. Mortimer

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J. H. E. E. E.



# UNITED STATES PATENT OFFICE.

EDGAR PENNEY, OF WAYNESBOROUGH, PENNSYLVANIA.

## STEAM GANG-PLOW.

SPECIFICATION forming part of Letters Patent No. 316,391, dated April 21, 1885.

Application filed October 14, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, EDGAR PENNEY, a citizen of the United States, residing at Waynesborough, in the county of Franklin and State of Pennsylvania, have invented certain new and useful Improvements in Steam Gang-Plovs; and I do hereby 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.

This invention relates to steam-plovs of that type in which a gang of plovs is directly hitched to a traction-engine, no separate plov-frame being used.

My improvement consists of certain combinations of mechanical devices, which combinations are specifically pointed out in the claims at the close of this specification, and the practical application and *modus operandi* of which are clearly set out in the following detailed description, aided by the annexed drawings.

Figure 1 is a plan view of my improved steam gang-plov, so much only of a traction-engine being shown as is necessary to illustrate my invention. Fig. 2 is a side elevation of the same. Figs. 3 and 4 illustrate a modification of one of the details, which will be specifically referred to hereinafter.

The same letters of reference indicate identical parts in all the figures.

In the example of my invention illustrated in the annexed drawings a diagonal gang of five plovs, 1 2 3 4 5, is provided, the advance plov, 1, of which runs on a line outside of the adjacent traction-wheel of the engine, and is coupled to the downwardly-projecting arm A' on the rear axle, A, thereof. The remaining plovs are coupled to the struts B' of a truss, B, under the rear platform or framework, C, of the traction-engine, the truss being arranged on a diagonal line which is parallel to the diagonal rank of the plovs and passes through the hitching-arm A' of plov 1. Plov 5 also runs on a line outside of the adjacent traction-wheel, so that the diagonal truss has to project laterally so far that it is advisable to connect its projecting end by a tie-rod, A<sup>3</sup>, to a downwardly-projecting arm, A<sup>2</sup>, similar to arm A', but on the other end of the rear axle, which connection has the addi-

tional advantage that it helps to equalize the strain on the rear axle, consequent upon pulling the plovs. The arms A' and A<sup>2</sup> are connected by tie rods a' a<sup>2</sup> to the traction-engine frame forward of the traction-wheels. Each plov is coupled to its respective hitching strut or arm on the traction-engine by a coupling-link, D, the hitching-arm A' and the hitching-struts B' being provided with vertical series of pin-holes for the attachment at the proper height of the forward end or shank of the coupling-link. The rear end of the coupling-link is a flat vertical head, between the cheeks of which the forward end, E', of the plov-beam E is pivoted. The said head is provided with a vertical series of pin-holes, so that the end E' of the plov-beam may be attached to it at any required height.

A caster-wheel, F, is mounted on the head of the coupling-link, serving to support, in part, both the link and the plov, as well as to gage the depth of furrow. In order that this caster-wheel may be of considerable size, and that at the same time the point where the draft is applied to the plov may be kept sufficiently low down, I construct the forward end of the plov-beam with a goose-neck, as clearly shown in Fig. 2, so that the caster-wheel can turn under it. The plov-beam and its goose-neck may be formed in one piece; or the goose-neck may be a separate piece so bolted to the beam that the latter may be canted somewhat in either direction by turning it on its longitudinal axis while the bolts are loosened, to throw the plov more or less into land.

In order to steady the plovs laterally and to keep them the proper distances apart, the coupling-links D may be connected by lateral braces so contrived and applied as to let the links move independently in vertical directions with freedom. To this end the coupling-links may be connected by pivoted cross-braces G, two of which are shown in Fig. 1; or the same result may be obtained by a diagonal connecting-rod, H, (one end only of which is shown in Figs. 1 and 2,) loosely connected or pivoted at its respective ends to arms on the heads of the coupling-links of plovs 1 and 5, while the heads of the coupling-links of the intermediate plovs are provided with upright forked arms h, to embrace the connecting-rod



between pairs of adjustable collars or nuts  $h'$  thereon, as shown best in Fig. 2.

The following hoisting apparatus is provided for raising and lowering the gang of plows:

5 The rear ends of the several plows are connected by chains or ropes  $i$  to a diagonal lifting-bar, I. From near one end of this lifting-bar a chain or rope,  $k$ , passes over and is fastened to the winding shaft or drum K, supported on a post, L, of suitable height, at one side of the rear platform or frame-work, C, of the traction-engine. From near the other end of the lifting-bar another chain or rope,  $m$ , passes, parallel to rope  $k$ , to and over a sheave,  $m'$ , on top of a post, M, erected on the other side of platform C, diagonally opposite post L, and of about the same height. a line drawn from the center of sheave  $m'$  to the center of that part of the winding-drum K to which rope  $k$  is fastened being about parallel to the diagonal lifting-bar and the diagonal rank of the plows. From sheave  $m'$  rope  $m$  is conducted, by suitable guide-pulleys,  $m^2$  and  $m^3$ , under the winding-drum K, to which it is fastened. The ropes  $k$  and  $m$  are kept separated by a dividing flange or drum, K. The winding-drum is turned by suitable gearing and provided with a brake, as usual.

It will be observed that the plows are lifted at their rear ends only, and that when they are lifted to about the position in which one of them is shown by dotted lines in Fig. 2 they are in great part supported on their own caster-wheels F, which is a good feature in that it greatly decreases the undesirable tendency to tilt down the rear end of the engine by the weight of the plows.

Instead of the caster-wheel truck F, a truck of ordinary wheels, N, may be used, as shown in Figs. 3 and 4, the construction of the head of the coupling-link and of the plow-beam being suitably changed; but in that case it is necessary to raise the front end of the plow with these gage-wheels N clear of the ground, as well as the rear end. This may be effected, where the above-described hoisting apparatus is employed, by a lifting-arm,  $N'$ , on the head of the coupling-link, so fixed thereto that in lifting the plow its beam will strike the arm, after which the coupling-link will turn up with the plow.

It will be observed that the gang of plows span a wider area than the rear wheels of the traction-engine, so that the latter may run on land with both wheels.

I do not claim herein hitching plows to a diagonal truss, that being covered by my application for a United States patent filed October 14, 1884, Serial No. 145,491; nor do I claim supporting the hoisting apparatus on the traction-engine and constructing and connecting the plowing attachment in such manner that the whole of it may be lifted off the ground, that being covered by the application of William H. Snyder for a United States patent filed October 18, 1884, Serial No. 145,873.

I claim as my invention—

1. The combination, substantially as before set forth, of a traction-engine the rear axle of which is provided, outside of the wheels, with downwardly-projecting arms, and a diagonal gang of plows spanning a wider area than that straddled by the rear wheels of the traction-engine, the end plows being connected with the arms of the aforesaid rear axle and the intermediate plows to the traction-engine at points between its rear wheels.

2. The combination, substantially as before set forth, of a traction-engine the rear axle of which is provided, outside of the wheels, with downwardly-projecting arms, the diagonal truss secured under the rear end of the frame of the traction-engine, a rod for connecting the laterally-projecting receding end of the truss to one of said arms, a diagonal gang of plows spanning an area wider than that straddled by the rear wheels of the traction-engine, and coupling-links provided with supporting-trucks at their rear ends for connecting the advance end plow to the other one of said arms and the remaining plows to the said diagonal truss.

3. The combination, substantially as before set forth, of the goose-necked plow-beam, the coupling-link for hitching it, and the caster-wheel truck carried by the coupling-link, as described, so that the wheel runs under the goose-neck of the plow-beam.

4. The combination, substantially as before set forth, of the coupling-link supported on a truck at its rear end, a plow-beam pivoted to said coupling-link, and a lifting-arm on said link, whereby the plow in lifting it will strike the said lifting-bar and lift the coupling also.

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

EDGAR PENNEY.

Witnesses:

S. M. STOLER,

A. H. CAMPBELL.