

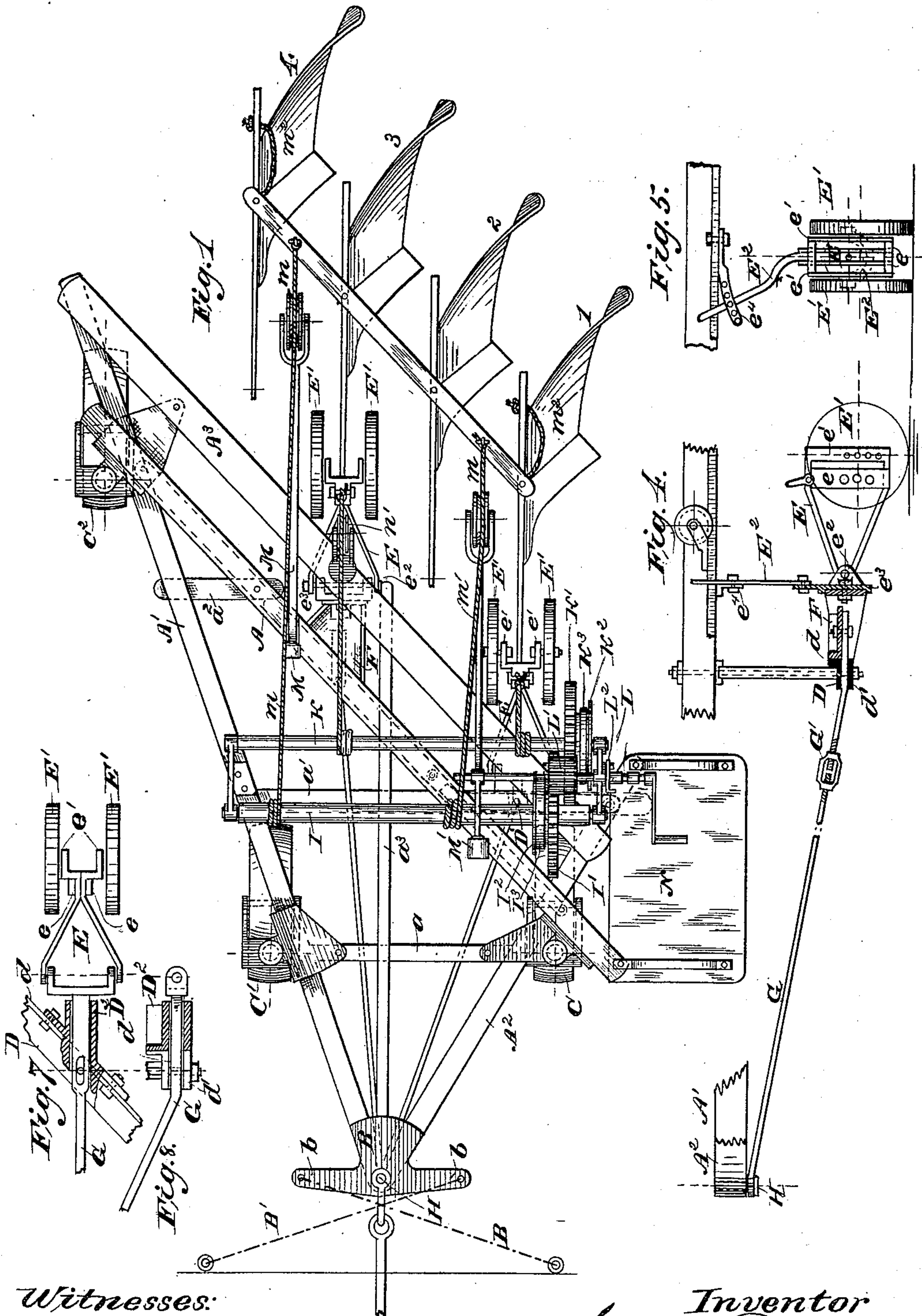
(No Model.)

2 Sheets—Sheet 1.

E. PENNEY.
STEAM GANG PLOW.

No. 316,393.

Patented Apr. 21, 1885.



Witnesses:

E. J. Walker

H. H. Mortimer

Inventor

Edgar Penney
by his attorney
J. E. Eib

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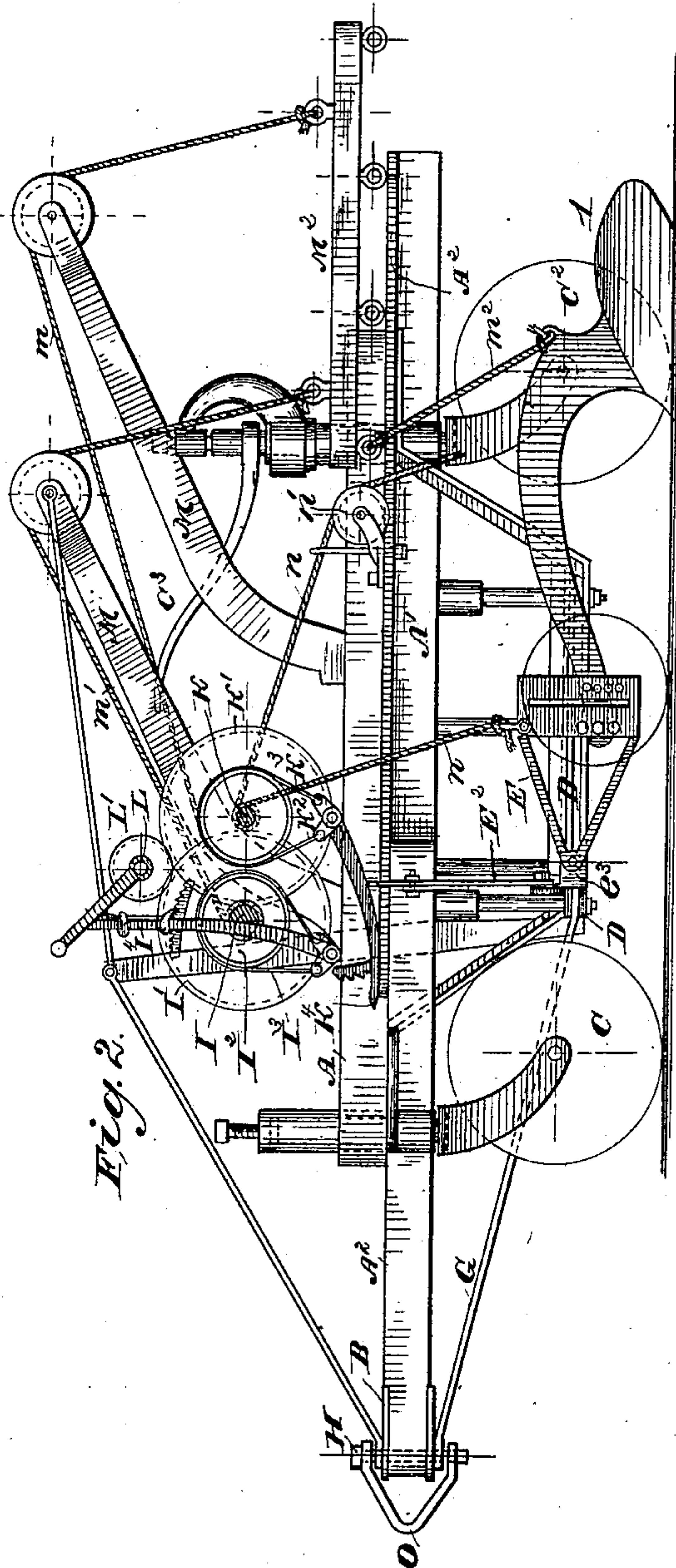


Fig. 2.

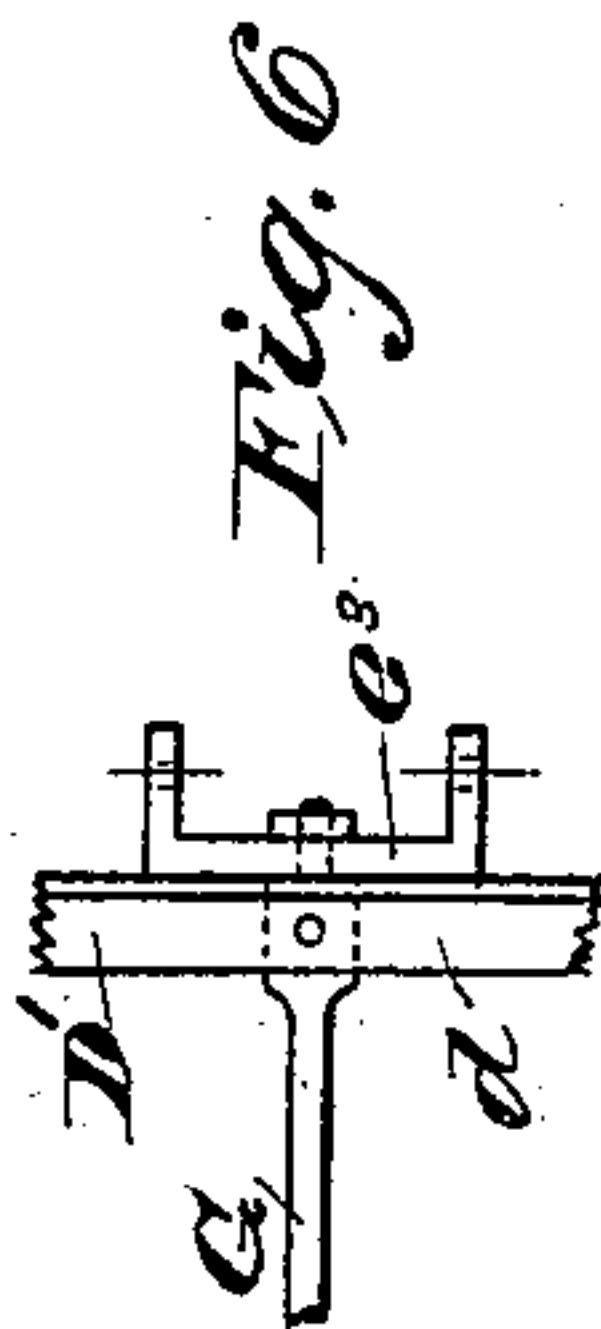


Fig. 6.

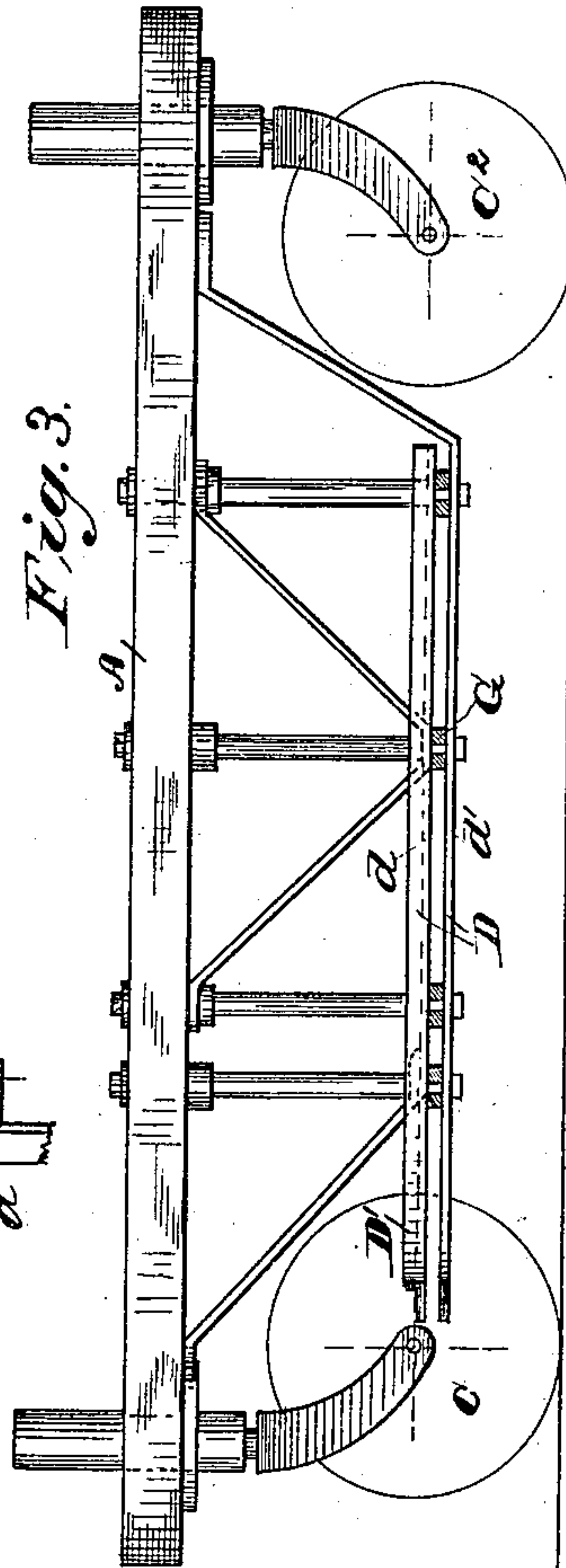


Fig. 3.

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UNITED STATES PATENT OFFICE.

EDGAR PENNEY, OF WAYNESBOROUGH, PENNSYLVANIA.

STEAM GANG-PLOW.

SPECIFICATION forming part of Letters Patent No. 316,393, 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-Plovers; 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 that style of steam-plovers in which an obliquely-arranged gang of plovers is so organized that it is specially adapted to be drawn by a detachable traction-engine.

My invention 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 can be clearly understood from the following detailed description, aided by the annexed drawings. The traction-engine is omitted from the drawings, it being understood that any suitable known traction-engine may be used for drawing the gang-plover.

Figure 1 is a plan view of my improved gang-plover, some parts, which are merely duplicates of other parts, being omitted for the sake of clearness of illustration. Fig. 2 is a side elevation of the same. Fig. 3 is a side elevation intended to represent more especially the trussed hitching-beam detached from other parts. Figs. 4, 5, and 6 illustrate parts of the gang-plover detached from the other parts thereof. Figs. 7 and 8 illustrate a modification of the mode of applying the draft-rods.

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

The frame of the gang-plover consists, principally, of the rear diagonal hitching-beam, A, and the side beams, A' and A², which converge from the hitching-beam toward and are united at the front end by the clevis-casting B. The side beams project beyond the diagonal hitching-beam to support a foot-board, A³, in rear of the hitching-beam, and the whole frame is strengthened by cross-beams a a' a² and a longitudinal center beam, a³. This triangular frame is supported upon three caster-wheels, C C' C². The wheel C is attached to

the side beam A², the wheel C' to the side beam A' at a point transversely opposite the wheel C, and the wheel C² is placed at about the junction of the side beam A' and the hitching-beam A, all as clearly shown in Fig. 1. These caster-wheels thus disposed can follow the inequalities of the surface of the ground without straining the frame. The hitching-beam is strengthened by trussing, as best shown in Fig. 3, and the lower chord of the truss is made available for the attachment of the plovers. In order that the lower chord, D, of the truss may not interfere with caster-wheel C, but still afford the means for the attachment of the plover 1, (the one that follows in about the tread of this caster-wheel,) the end of this chord adjacent to said caster-wheel projects at an angle from the main portion of the chord outward under the cross-beam a', as shown in dotted lines in Fig. 1, this angular end being marked D' in Figs. 1, 2, and 3.

The beams of the plovers are connected with the lower chord of the trussed hitching-beam by the following devices: The flat end of the plover-beam is inserted between the parallel vertical plates e of a frame-like coupling-link, E, which is provided at the end attached to the plover-beam with a pair of wheels, E' E', journaled to vertical flanges e' e' on the coupling-link, and designed to run on the ground. Both the plates e and the flanges e' are provided with vertical series of pin-holes, as clearly shown in Figs. 2 and 4, so that this end of the coupling-link may be vertically-adjusted with reference to the wheels E', which I term "gage-wheels," and the end of the plover-beam may also be adjusted vertically on the link, all for the purpose of regulating the pitch of the plover and gaging the depth of the furrow. The forward end of the coupling-link is forked, having horizontally-spread arms by which the link is pivotally connected by a cross-pin, e², to the head e³ of an upwardly-projecting lever, E². By this lever the coupling-link may be rocked on its longitudinal axis to cant the beam in one direction or the other, the effect of which will be to throw the plover more or less into land. The canting or land regulating lever E² is locked to a fixed arc, e⁴, after adjustment. The head e³ of the levers E² of each of the coupling-links of plovers 2, 3, and 4 is circular, and is pivoted to a circular plate

on the rear end of a bracket, F, the forward end of which is secured to the lower chord of the trussed hitching-beam. Tie-rods G connect the clevis-pin H with the lower chord of the truss and the brackets F, the rods being
5 made in two sections connected by a turn-buckle, G', for obtaining the proper tension.

To facilitate and strengthen the interconnection of the tie-rod, truss, and bracket, I
10 construct the lower chord of the truss of a bar of angle-iron, d , and a bar of flat iron, d' , arranged below the bar d at a distance to permit the passage of the flat end of the tie-rod. The struts of the truss are so arranged that
15 they pass through the several tie-rods G. For plow 1 the bracket F is dispensed with, and the head e^3 of the canting-lever E^2 is pivoted on a round end of the tie-rod G, as shown in detail in Fig. 6, in order that plow 1 may
20 run in the same oblique rank with the other plows, notwithstanding the bend in that portion of the lower chord of the truss where it is attached.

Instead of connecting the coupling-link
25 with a bracket fixed to the lower chord of the trussed hitching-beam, its forked forward end may be pivoted to a cross-head on the rear end of rod G, and the latter may become a draft-rod by adopting the construction shown
30 in Figs. 7 and 8, where the flattened part of the rod G is adapted to slide in a socket, D^2 , secured to the angle-iron bar d of the lower chord of the truss hitching-beam.

It will be observed that the means described
35 for connecting the plows with the lower chord of the hitching-beam permit the plows to move freely up and down to follow the surface inequalities, but hold them steady in lateral directions. The use of a trussed hitching-beam
40 with the lower chord of which the plow-beams are connected enables me to use comparatively large caster-wheels.

The following hoisting arrangement is provided for lifting and lowering the plows. I
45 and K refer to two winding drums or shafts mounted in suitable bearings crosswise of the main frame. A spur-wheel, I' , is fixed on shaft I, and a spur-wheel, K' , on shaft K. These spur-wheels are out of line, and are
50 adapted to be driven either conjointly or separately by the pinion L' on the counter-shaft L. Shaft L is movable endwise in its bearings, so that its pinions may be caused to engage either, neither, or both of the spur-wheels I'
55 and K' , and is held in either of its four positions by a latch, L^2 , adapted to drop into one or another of four circular grooves, l , cut in the shaft. Two ropes or chains, $m m'$, are secured to winding-shaft I, extending up over
60 pulleys on top of two crane-posts, M M', which are erected on the diagonal hitching-beam A and suitably braced. The ropes $m m'$ carry a lifting-bar, M^2 , to which the rear ends of the plows are connected each by a separate rope
65 or chain, m^2 . The forward end of each plow is connected by a rope or chain, n , (secured in this instance to an eye on coupling-link E,) to the winding-shaft N, guide-pulleys n' being placed on foot-board A^2 , for some of these ropes n , in order that all may equally lift or
70 lower the front ends of the plows when wound on or unwound from the shaft K. In drawing the plowshare out of and elevating the plow bodily above the ground, it is necessary to lift the rear end of the plow through a
75 greater space than the front end.

In order that both plow ends may be lifted as far as required by one motion and in the same space of time, the surface speed of winding-shaft I should exceed that of shaft K when
80 they are simultaneously turned by pinion L' . This is effected in the example illustrated by the use of a winding-shaft I of greater diameter than winding-shaft K. Winding-shaft I is provided with a brake-wheel, I^2 , encircled
85 by a brake-band, I^3 , which is connected to brake-lever I^4 . Winding-shaft K is provided with a similar brake-wheel, K^2 , encircled by a brake-band, K^3 , which is connected to brake-lever K^4 . Brake-lever I^4 is a hand-lever, and
90 brake-lever K^4 is a foot-lever, and each is associated with a rack and latch for locking it. By means of these brakes the winding-shafts may be locked, either one or both, as may be required in the different operations of
95 raising and lowering the plows at either end, or at both ends simultaneously.

The counter-shaft L is provided with a winch for turning it, and below it a platform, N, is applied to the main frame, to serve as a stand
100 for the plowman, from which he can watch the performance of the plows and make such adjustments as circumstances may call for from time to time. The platform N is preferably detachably connected.
105

When the plows are at work, the hoisting-ropes should be slackened sufficiently to permit the plows to follow and accommodate themselves to surface inequalities. To withdraw the plows from the ground while plow-
110 ing, lift their forward ends first to give the shares an upward pitch, so that they will naturally run up out of the soil as the plows are drawn along. It will be observed that while in operation the plows are mainly self-sup-
115 ported, and the main frame has to sustain but a small fraction of their weight and of the pulling-strain.

The clevis O may be provided with a suitable draw-bar for attachment to the traction-
120 engine. The clevis-casting B is constructed with arms $b b$, in order that cross-chains B' B' may be run from said arms to the axle or frame of the traction-engine, for the purpose of preventing lateral sway of the gang-plow
125 at this point.

The caster-wheels are associated with suitable means for their vertical adjustment. The stock of the rear caster-wheel, C^2 , is provided with a hand-lever, C^3 , so that the plowman
130 may operate said caster-wheel as a steering-wheel to guide the plow-frame whenever desirable, as in making sharp turns or in backing.

I claim as my invention—

1. The combination, substantially as before set forth, of the diagonal trussed hitching-beam, a diagonal gang of plows, and coupling
5 devices, substantially such as described, for connecting the plow-beams with the truss of the hitching-beam.

2. The combination, substantially as before set forth, of a plow-beam, the coupling-link
10 for connecting the plow-beam with the main frame, and a vertically-adjustable gage-wheel on the coupling-link.

3. The combination, substantially as before set forth, of a gang of plows, a winding-shaft

provided with a spur-wheel and connected by 15 ropes or chains with the front ends of the plows, a second winding-shaft also provided with a spur-wheel and connected by ropes or chains with the rear ends of the plows, and a single endwise movable pinion adapted to 20 drive said winding-shafts either separately or conjointly.

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

EDGAR PENNEY.

Witnesses:

S. M. STOLER,

A. H. CAMPBELL.