(No Model.) 3 Sheets—Sheet 1.

J. D. MALONE & J. F. HAMEL.

STEAM PLOWING MACHINE.

No. 277,761. Patented May 15, 1883.

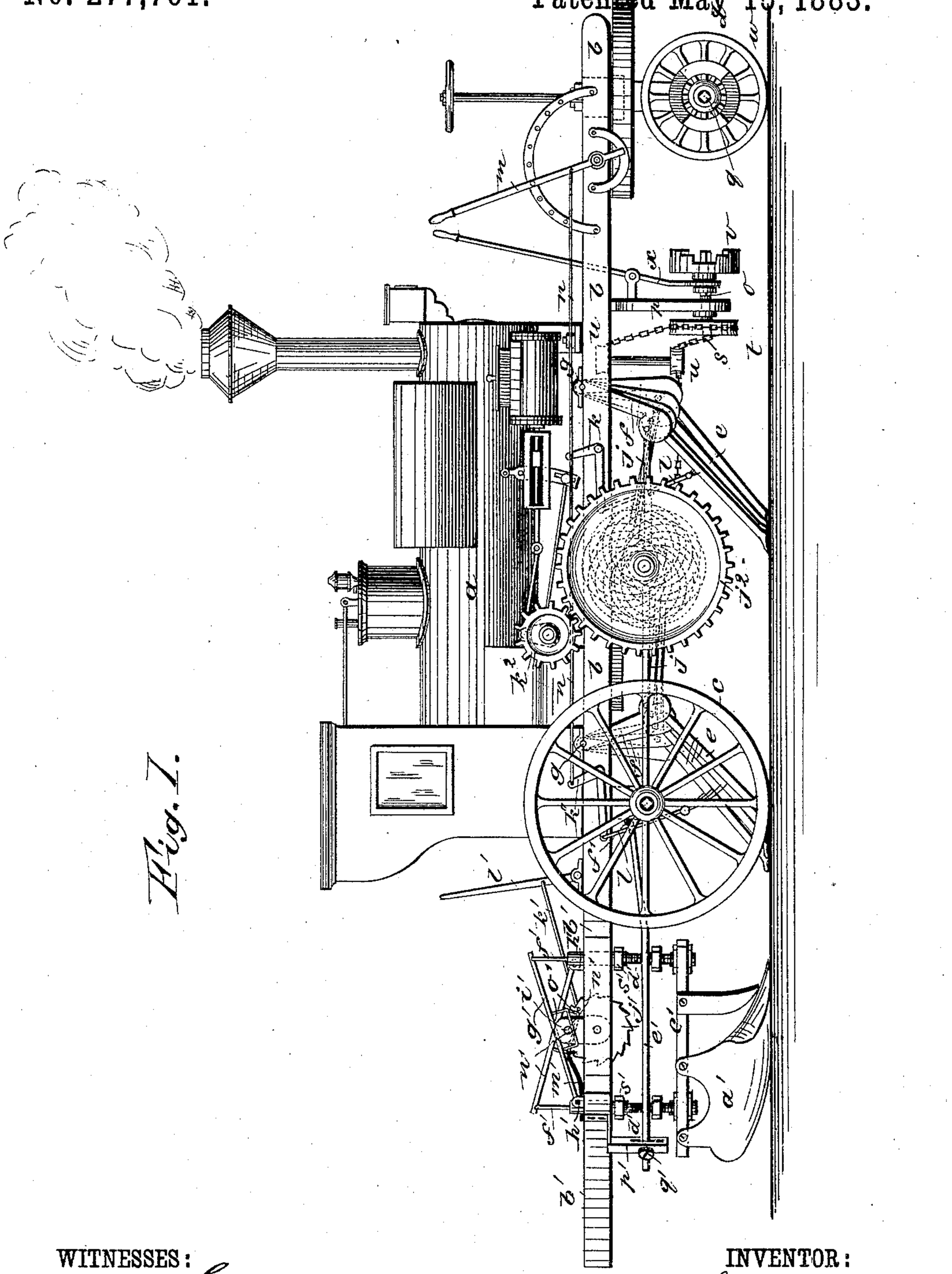

Fig. 1.

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STEAM PLOWING MACHINE.

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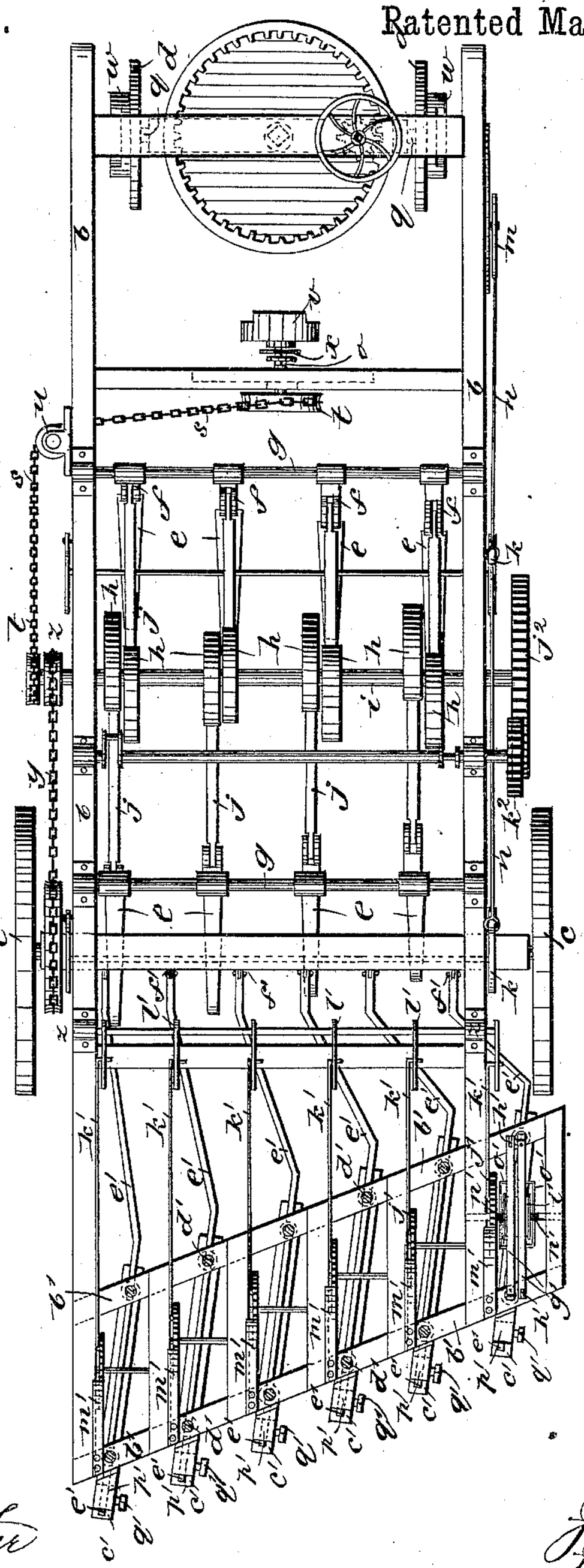

Fig. 2.

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STEAM PLOWING MACHINE.

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Fig. 3.

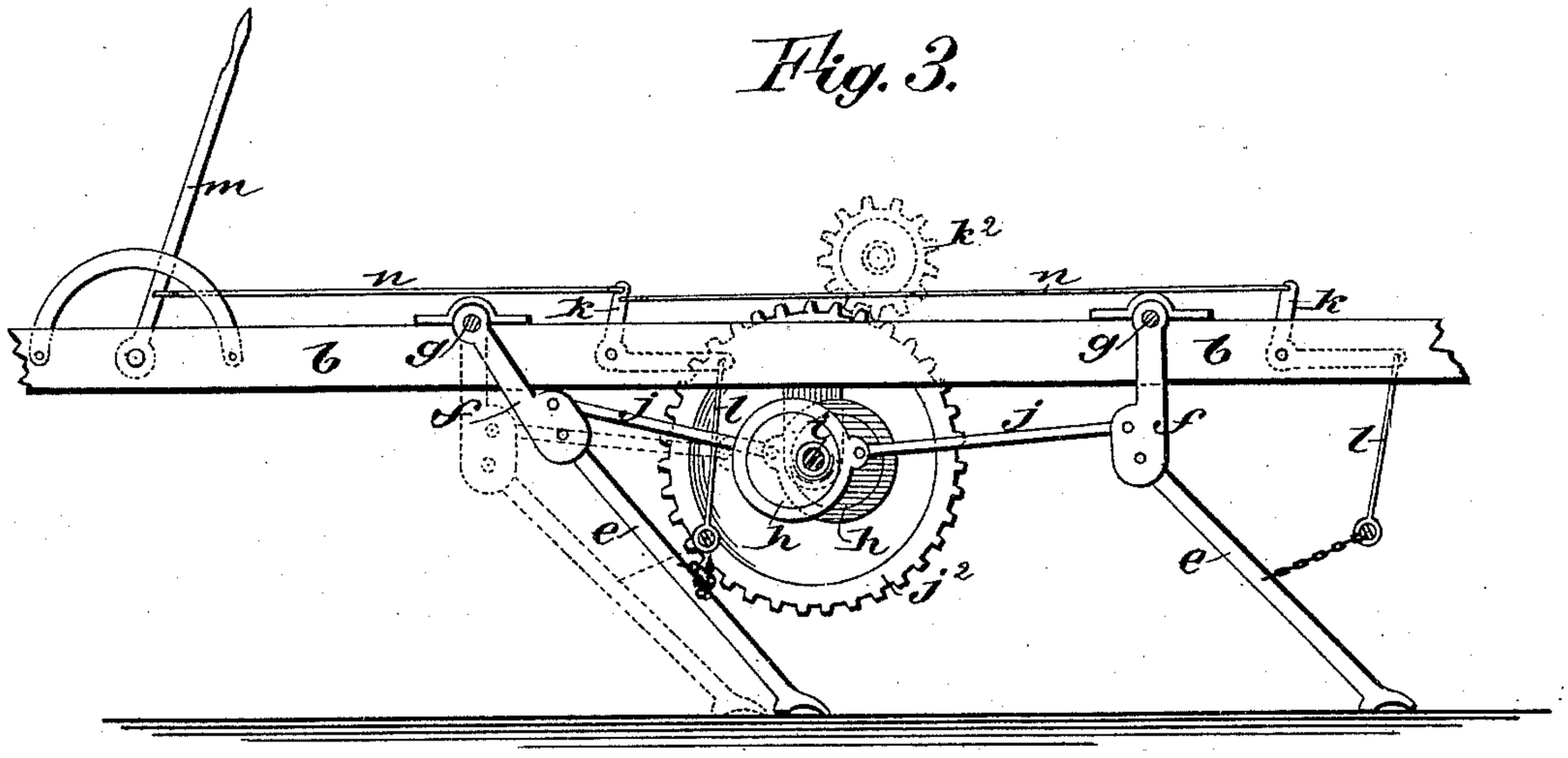

Fig. 4.

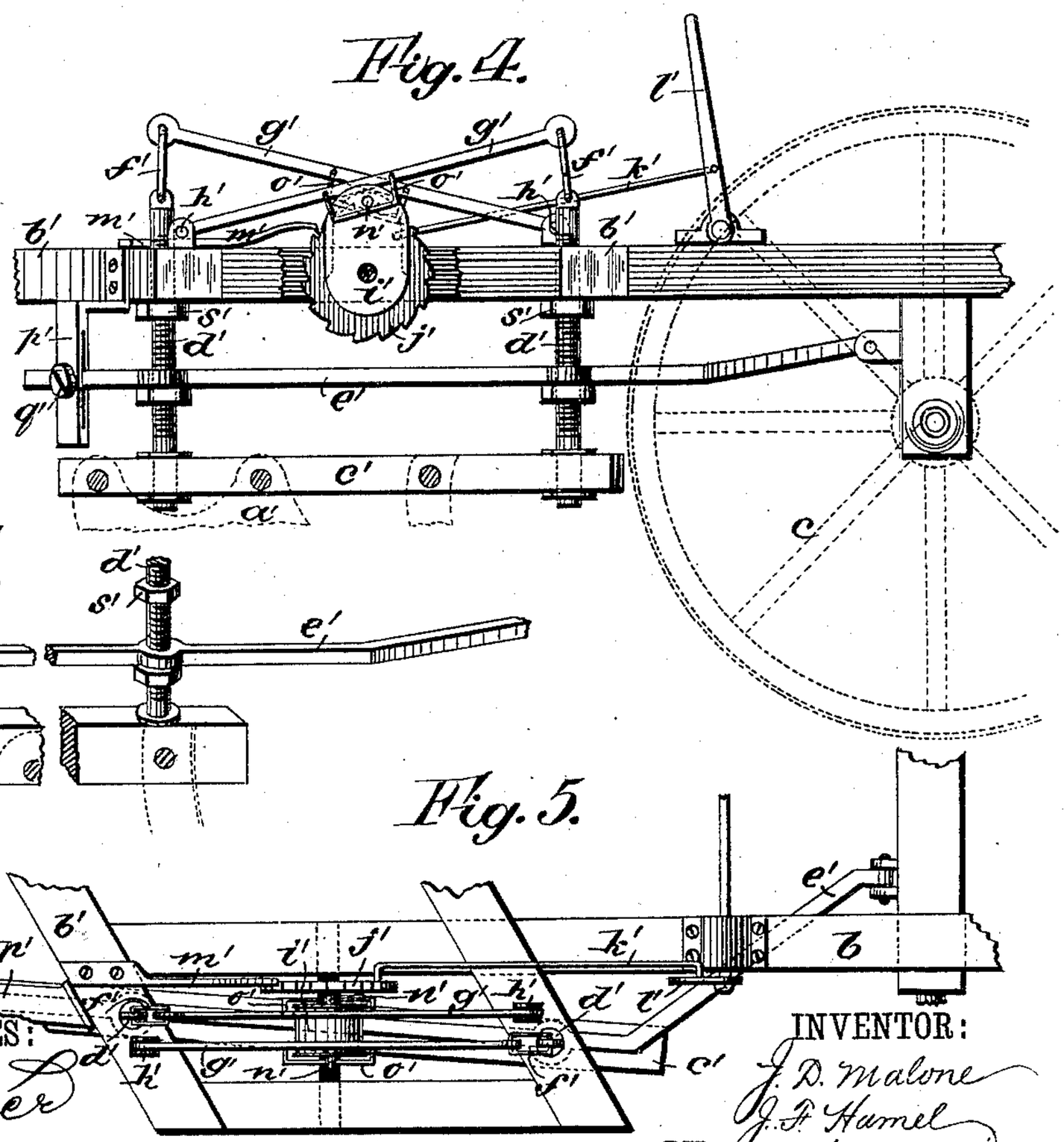

Fig. 6.

Fig. 5.

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UNITED STATES PATENT OFFICE.

JOHN D. MALONE AND JOSEPH F. HAMEL, OF PITTSBURG, PENNSYLVANIA.

STEAM PLOWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 277,761, dated May 15, 1883.

Application filed December 28, 1882. (No model.)

To all whom it may concern:

Be it known that we, JOHN D. MALONE and JOSEPH F. HAMEL, both of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and Improved Steam Plowing-Machine, of which the following is a full, clear, and exact description.

The object of the invention is to render steam-plows practicable by certain improvements, hereinafter described and claimed.

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

Figure 1 is a side elevation of our improved machine, and Fig. 2 is a plan view of the running-gear. Fig. 3 is a longitudinal vertical section, showing the pushers with their operative mechanism. Fig. 4 is also a vertical section, showing the means by which the plows are suspended in gangs. Fig. 5 is a plan view of the mechanism for suspending the plows. Fig. 6 is a detail view, in elevation, showing the means for adjusting the plows.

We mount the boiler *a* on any suitable frame, *b*, mounted on the hind carrying-wheels, *c*, and front carrying and steering wheels, *d*, and for the propelling contrivances we use pushers *e*, jointed to the hangers *f*, pivoted on the axes *g*, and connected to the eccentrics *h* on the driving-shaft *i*, which is geared with the crank-shaft by the wheel j^2 and pinion k^2. We propose to employ two sets of the pushers, one being ahead and the other behind the eccentric-shaft, using as many in each set as may be preferred, and adjusting the eccentrics so as to work the pushers in suitable succession to perform their duty in the best manner. By the flexure of the joints of the said pushers with the hangers *f* in the forward movements and the straightening of the same in the back-stroke, the pushers are enabled to take strong hold on the ground and advance the machine in the measure due to the difference of their extension in the forward and backward movements. At the same time they have a lifting effect on the machine calculated to prevent the wheels from sinking in soft ground and thus making greater resistance to the propelling-power. The pushers are connected with the eccentrics for being thus operated by suitable rods, *j*, said rods being attached to the hangers at the joints with said pushers. They are also connected with bell-cranks *k* by rods *l*, to be lifted off the ground, when required, by a lever, *m*, connected to said bell-cranks by a rod, *n*.

For applying the steam-power to the turning of the machine shortly around, we have a short shaft, *o*, mounted in a hanger, *p*, so as to line with the front axle, *q*, when turned around to the longitudinal axis of the machine, and geared with the eccentric-shaft by an endless chain, *s*, pulleys *t*, and suitable guide-pulleys, *u*, to be set in motion when required, and on this shaft we have a clutch, *v*, to be shifted into gear with a corresponding clutch, *w*, on either one of the wheels of the front axle by a lever, *x*, when desired, by which the front wheels may be turned by the power of the engine when necessary to use it for the purpose.

We also have the eccentric-shaft geared with one of the hind wheels by an endless chain, *y*, and pulleys *z*, to be used when required for faster speed along the road, and for turning the machine in crooked roads, which the pushers cannot do.

We also propose to have the crank-shaft provided with a pulley for being used to drive other machinery by the engine, the machine being stationary and the eccentric-shaft disconnected.

We propose to suspend the plows *a'* in a gang along the diagonal end frame, *b'*, by means of a short bar or beam, *c'*, attached to the lower ends of the vertical rods *d'*, fitted to shift up and down through the frame-timbers; also passing through the adjusting-bars *e'*, and connected at the upper ends by rods *f'* with levers *g'*, near their free ends, said levers being pivoted at the other ends to fulcrums *h'*, and resting on cams *i'*, to be worked by ratchet-wheels *j'*, pawls *k'*, and pawl-levers *l'*, to raise and lower the plows, said ratchet-wheels being provided with suitable holding-pawls, *m'*, to retain them, as required. The cams also have a stud or wrist pin, *n'*, working in a yoke, *o'*, on the levers, to hold the plows down and prevent them from being thrust upward in service. The rods *d'* pass through the regulating-bars *e'*, which have pivotal connection with the frame at *f'*, and are made to shift up and down the hangers *p'*, and fasten by a set-screw, *q'*, for a variable rest, on which the plows may be suspended by the collars *s'*, which are adjustable up and down the rods, to vary their posi-

tion, as may be required. There is to be a ratchet, cam, and lever mechanism to each plow for working the plows independently of each other.

We propose to make the rear extension of the frame on which the plows are mounted detachable, in order that the motor may be used for hauling trucks when required.

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

1. In a steam-plow, the combination, with the pivoted pushers *e*, of the hangers *f*, pivoted to axes *g*, the pivoted rods *j*, the eccentrics *h*, and the shaft *i*, connecting with suitable operative mechanism, whereby the hanger may be moved, as described.

2. The combination, with the pushers *e*, of the front chains and mechanisms *l k n m*, whereby the pushers may be lifted, as described.

3. In a steam-plow, the combination of the short shaft *o*, the axle having clutch *w*, the endless chain *s*, pulleys *t u*, and an eccentric-shaft carrying the slide-clutch *v*, adapted to be operated by a lever, *x*, whereby the front wheels may be turned, when plowing, by the power of the engine, as described.

4. The combination, in a steam plowing-machine or traction-engine, of a clutch-gear, *o v*, arranged in the longitudinal axis of the machine to connect with the steering-wheels, and being geared with the driving-shaft, substantially as described.

5. The combination, in a steam plowing-machine or traction-engine, of clutches *w* on the guiding or steering wheels, clutch-gear *o v*, endless driving-chain *s*, pulleys *t*, guiding-pulleys *u*, and the driving-shaft *i*, substantially as described.

6. The combination, with the plows *a'*, of the beams *c'*, the rods *d'*, the bars *e'*, the rods *f'*, the levers *g'*, fulcrumed at *h'*, the cams *i'*, having lugs or studs *n'*, the yoke *o'*, the ratchet-wheels *j'*, the pawls *k'*, and the levers *l'*, whereby the plows may be worked, as described.

7. The combination, in a plowing-machine, of plows *a'*, suspending-rods *d'*, cams *i'*, levers *g'*, and ratchet mechanism for operating said cams, substantially as described.

8. The combination of stud or crank pins *n'* and yokes *o'* with the levers *g'*, suspending-rods *d'*, and plows *a'*, substantially as described.

9. The combination of adjusting-bars *e'* and collars *s'* with the suspending-rods *d'* and plows *a'*, substantially as described.

10. The combination, with the regulating-bars *e'*, having a pivotal connection with the frame, of the hangers *p'*, the set-screws *q'*, and the collars *s'*, whereby the plows may be suspended adjustably, as described.

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JOSEPH F. HAMEL.

Witnesses:
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