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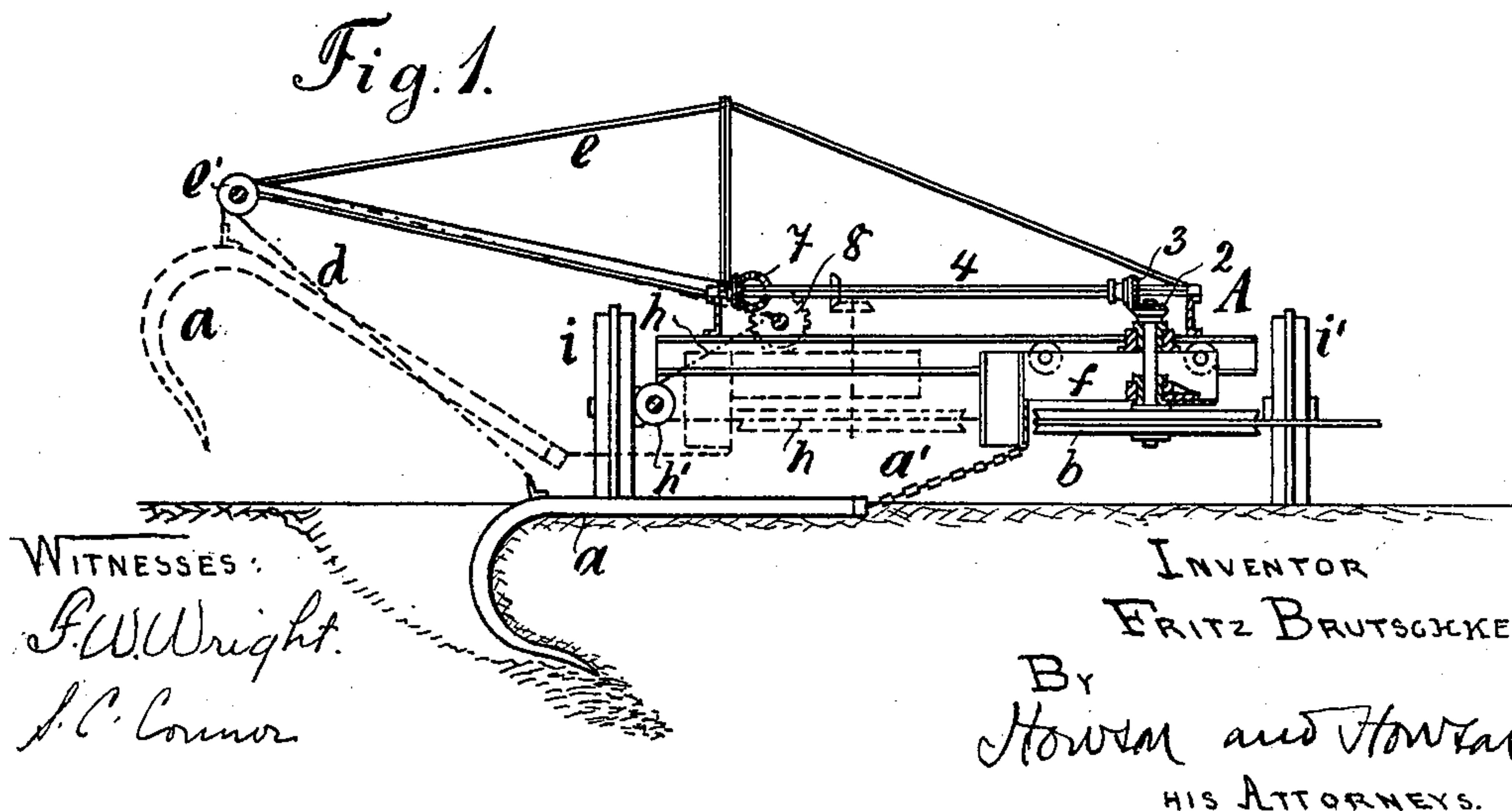
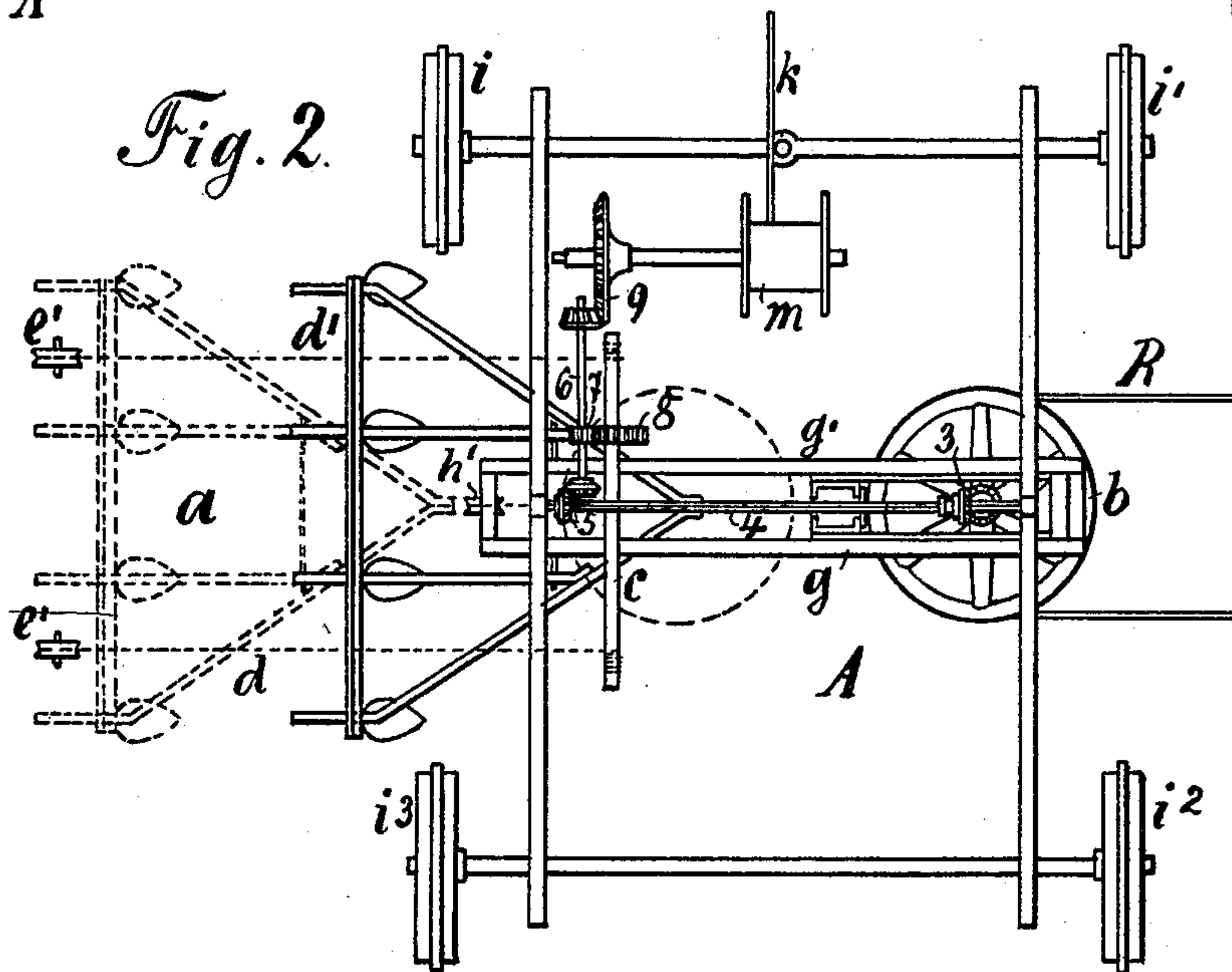
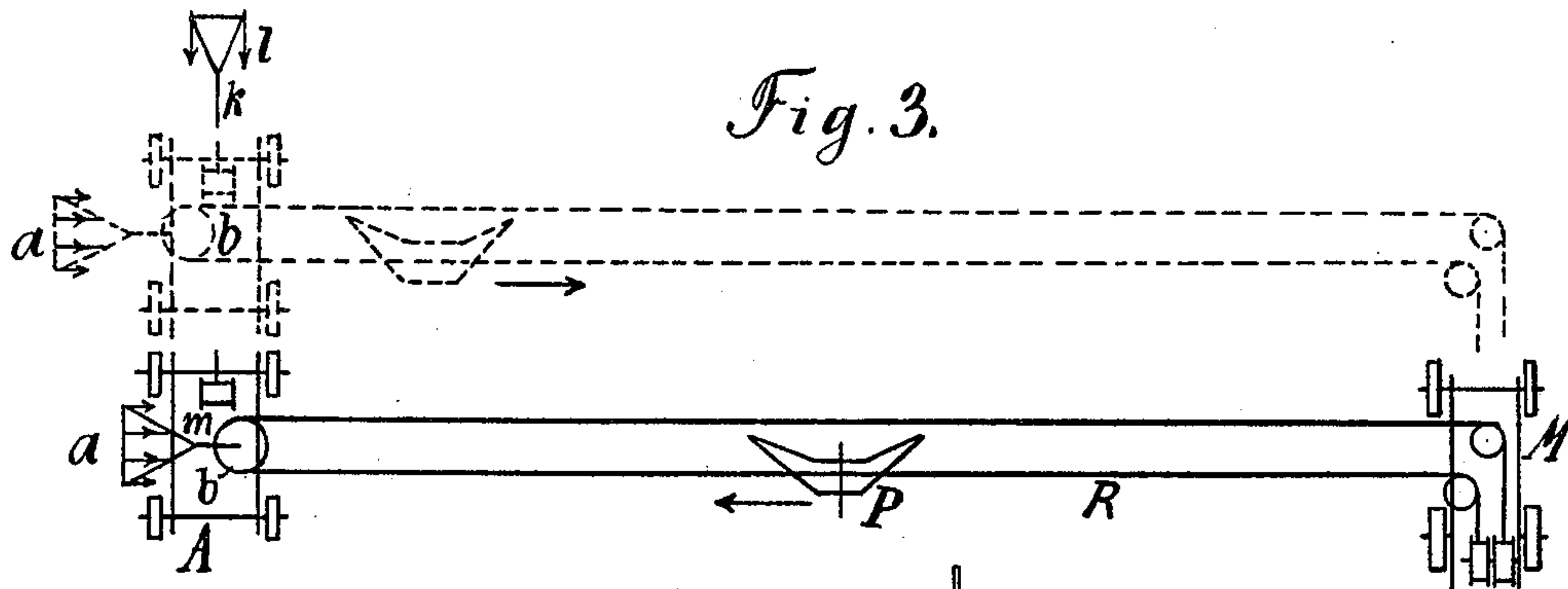
Patented Nov. 15, 1898.

F. BRUTSCHKE.
PLOWING APPARATUS.

(Application filed Sept. 15, 1897.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES:

F. W. Wright.

J. C. Connor

INVENTOR

FRITZ BRUTSCHKE

By

Howan and Howan

HIS ATTORNEYS.

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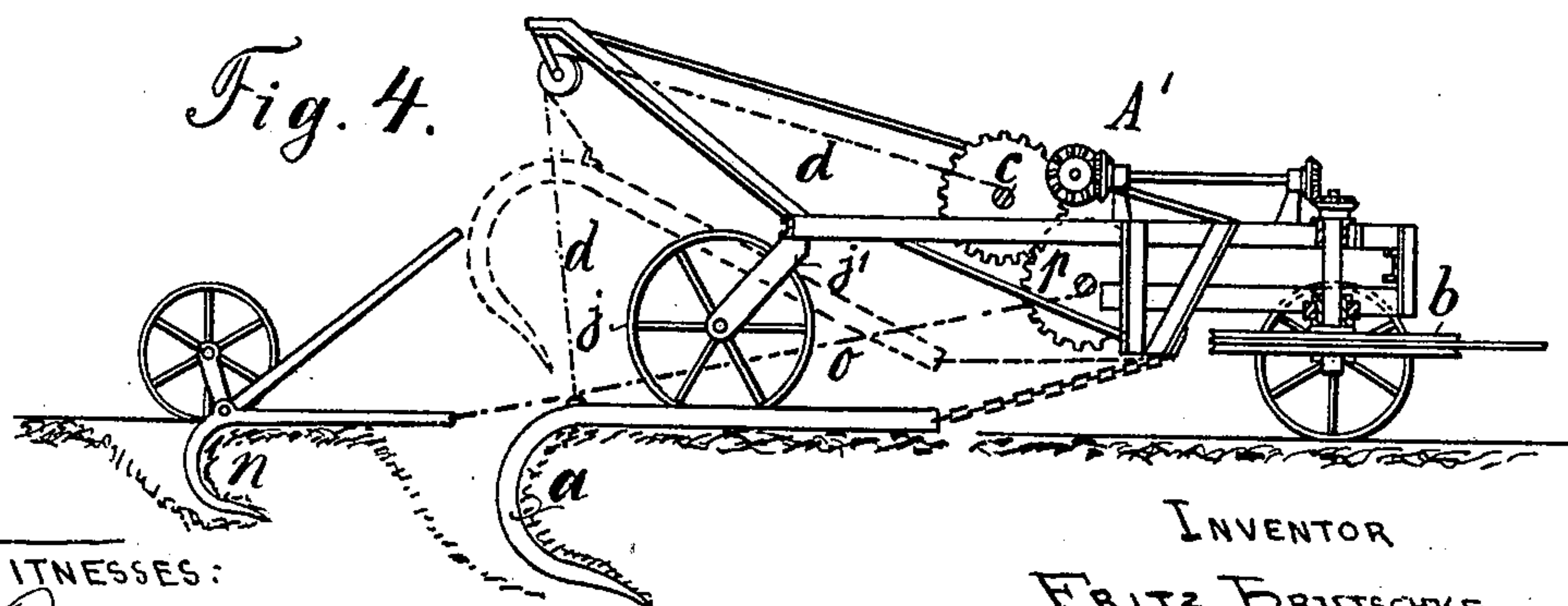
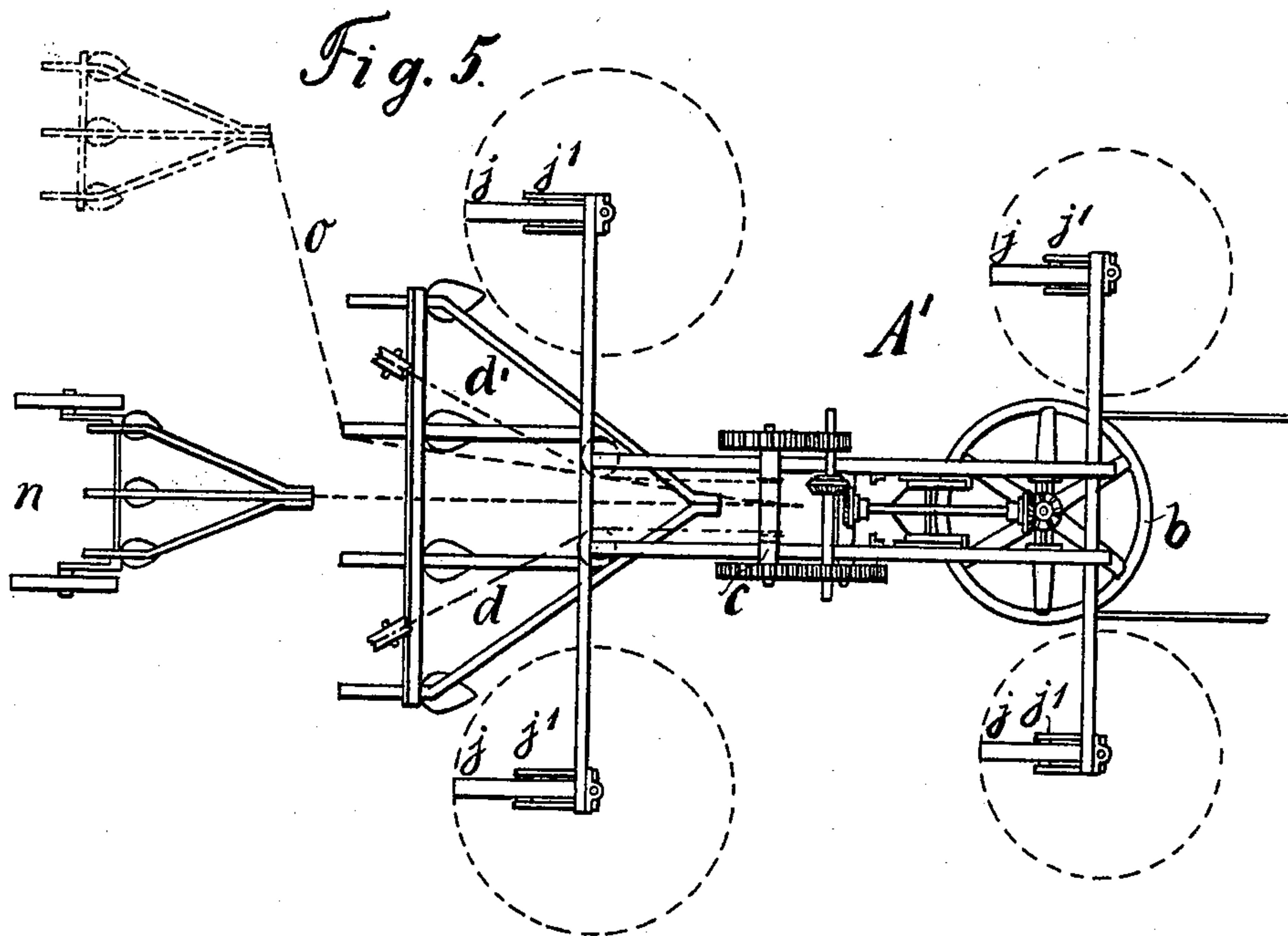
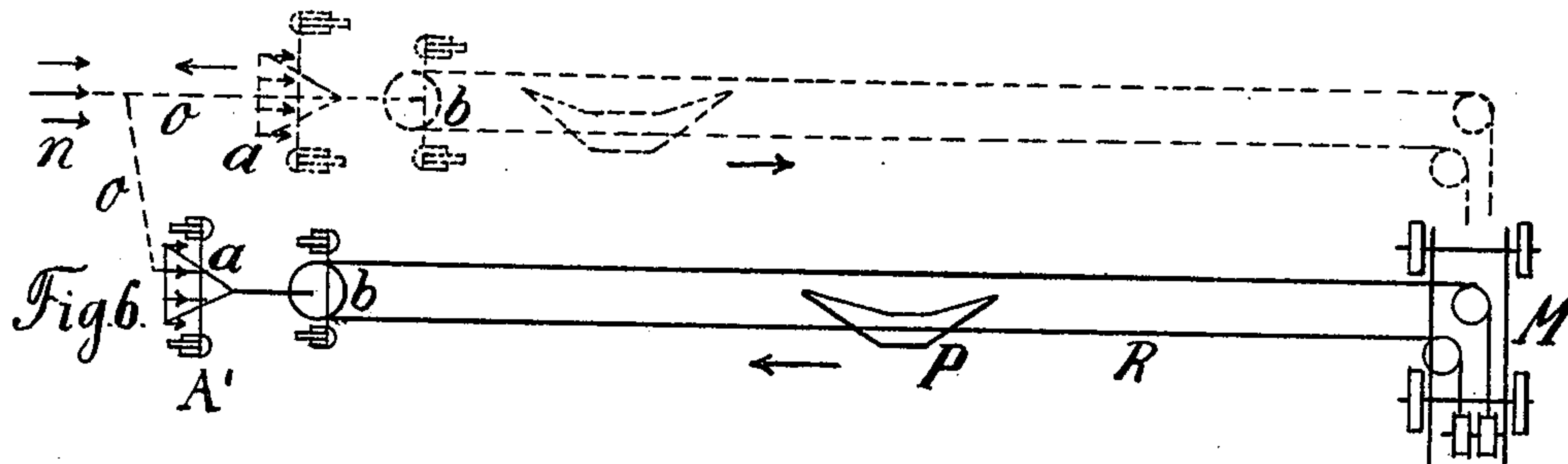
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Howson and Howson

HIS ATTORNEYS

UNITED STATES PATENT OFFICE.

FRITZ BRUTSCHKE, OF CHARLOTTENBURG, GERMANY.

PLOWING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 614,363, dated November 15, 1898.

Application filed September 15, 1897. Serial No. 651,745. (No model.)

To all whom it may concern:

Be it known that I, FRITZ BRUTSCHKE, a subject of the Emperor of Germany, and a resident of Charlottenburg, Berlin, Germany, have invented Improvements in Plowing Apparatus, (for which patents have been obtained in Germany, No. 91,582, dated December 24, 1895; in France, No. 259,100, dated August 22, 1896; in Great Britain, No. 19,138, dated August 29, 1896; in Italy, XXXII, No. 44,217, LXXXVI, No. 360, dated March 31, 1897; in Spain, No. 20,929, dated July 14, 1897, and in Austria, No. 47/2,243, dated June 16, 1897,) of which the following is a specification.

My invention relates more particularly to that type of mechanical plowing apparatus in which a portable motor-carriage is set up at one end of the field to traverse the plow by means of a wire rope passing round a pulley at the other end of the field where the pulley is temporarily fixed. Ordinarily this pulley is mounted on a carriage, and the grip of the wheels of this carriage upon the ground has been relied upon to fix or secure the pulley against the pull and strain on the hauling-rope. This method of securing the pulley is unreliable, however, as will be readily seen.

According to my present invention the fixing of the plowing appliance is effected by means of strong ground-anchors, which enter the ground to a depth depending on the tension of the rope and securely hold the pulley-carriage. When the anchor enters the ground, it makes a slight movement in the direction of the plow-rope, which must be compensated for at every to-and-fro movement of the plow if the distance between the anchor and motor is not to become gradually less. Furthermore, the anchor must be moved laterally for every furrow and the cable guide pulley or roller must also be similarly moved. In the case of smaller plows the adjustment of the position of the anchor is effected by the attendant and the movement of the guide-roller by the movement of the hauling-rope. In the case of larger plows the anchor is too heavy to be so manipulated and the hauling-rope is therefore utilized for this purpose.

In the accompanying drawings, Figure 1 is a vertical section in the direction of the plow-rope of a plow having my improvements

applied thereto. Fig. 2 is a plan of the same. Fig. 3 is a diagrammatic view illustrating the method of plowing a field by means of my improved implement. Figs. 4, 5, and 6 are views similar to Figs. 1, 2, and 3, respectively, illustrating a slight modification.

Referring to the diagram Fig. 3, in which I have represented the plowing apparatus in two positions, the second one being indicated by dotted lines, M is the motor-carriage, R is the wire rope, to which is connected the plow P, and A is the anchoring-carriage, having a pulley *b*, round which the rope R passes. The anchor *a* is provided with a number of broad flukes or arms to enter the ground and is connected to the frame carrying the pulley *b* by a chain *a'*, Fig. 1, of constant length. To the back end of the anchor *a* are connected two chains *d d'*, Fig. 2, which pass over pulleys *e'* on a crane-like frame *e*, mounted on the carriage A. The inner ends of these chains *d d'* are connected to and can be wound up on a shaft *c*, mounted in bearings in the carriage A. This chain-shaft *c* may receive its winding motion from the hauling-rope R through the pulley *b* and suitable gearing. By way of illustration I have shown the upper end of the shaft of the pulley *b* as provided with a bevel-wheel 2, adapted to be engaged with a bevel-wheel 3 on a polygonal or splined shaft 4, which thence transmits motion through bevel-gears 5 to a shaft 6, having a pinion 7, engaging with a gear 8 on the winding-shaft *c*. Suitable means may be employed to throw these gears into and out of action under the control of the operator—as, for instance, by sliding the bevel-wheel 3 on the shaft 4.

In the construction shown in Figs. 1, 2, and 3 the pulley *b* is mounted in a small carriage *f*, arranged to slide in the direction of the plow-rope between two channel-iron guides *g* and *g'*. A third chain *h* is connected to and winds up on the shaft *c*, and, passing round a pulley *h'*, is connected at its other end to the carriage *f*. When this chain *h* is wound up on the shaft *c*, it pulls the carriage *f* with its pulley *b*, and also the anchor *a*, backward simultaneously with the raising of the anchor from the positions shown by full lines to those shown by dotted lines in Figs. 1 and 2.

The carriage A is mounted on four wheels

$i\ i'\ i^2\ i^3$ on ordinary axles, the front axle being pivoted at x , Fig. 2, for steering. When the anchor has been raised and the pulley b correspondingly drawn back, the anchoring-carriage is then moved laterally for the next furrow. This movement may be effected in any suitable way from the power of the hoisting-rope—as, for instance, by causing a rope k , connected to a side anchor l , Fig. 3, to be wound up on a drum m on the carriage. This drum may be driven from the shaft 6 through bevel-gear 9, Fig. 2.

The operation of this type of implement is as follows: When the plow P, Fig. 3, is drawn toward the anchoring device by the motor-carriage, the anchor a enters the ground to such a depth that it resists the total pull on the rope-pulley. The supporting-carriage A is not subjected to any lateral pull. When the plow is pulled backward toward the motor-carriage, the anchor has only to resist the pull of the loose rope, so that it can be raised from the ground by the rotation of the shaft c , and is simultaneously moved backward with the rope-pulley, and the carriage is then moved laterally for the next furrow. The pull of the loose rope must be taken up by the said carriage. When the carriage has been moved far enough, the anchor is again entered in the ground.

In the form of my invention illustrated in Figs. 4, 5, and 6 the movement of the anchor a is effected in a different manner. The anchor a and rope-pulley b rest on a carriage-frame A', the four wheels $j\ j$ of which are swiveled by being supported in forked or other bearings j' , which can automatically adjust themselves on vertical axles for every direction of motion. A second smaller anchor n , adapted to be operated by hand, is connected by means of a chain o , Fig. 5, to a second shaft p , which is operated from the rope-pulley b by any suitable gearing.

The operation is as follows: When the plow is pulled toward the anchoring device, the anchor a grips in the ground and securely holds the pulley b and the carriage-frame. The smaller anchor n is for the next furrow shifted laterally and somewhat backward, as indicated in dotted lines in Fig. 5. When the plow returns toward the motor-carriage, the anchor a is first lifted out of the ground

by the rotation of the pulley b , and after it is raised the carriage-frame A' makes a lateral movement on the chain o in the arc of a circle until it is in a line with the anchor n and the rope. Then by winding the chain o on the shaft p the whole carriage, with the anchor a and rope-pulley b , is drawn toward the smaller anchor n until the anchor a again enters the ground, when the anchor n is moved for the next furrow. The latter anchor has only to support the pull of the loose rope, so that it may be small and allow of its being moved by hand without difficulty.

The driving power on the motor-carriage may be a steam, petroleum, or benzin motor or an electromotor or the like.

I claim as my invention—

1. An anchoring device for power-driven plows, comprising a main carriage, a smaller carriage movable on said main carriage, a rope-pulley mounted on the smaller carriage, a ground-anchor connected to the latter, gearing to be driven by the pulley to move the smaller carriage in one direction, and the pull of the driving-rope moving it in the other direction, substantially as described.

2. An anchoring device for power-driven plows, comprising an anchoring-carriage, a smaller carriage mounted to slide thereon, a rope-pulley mounted on the smaller carriage, a ground-anchor connected to the latter, and means for moving both anchor and smaller carriage in the direction of the length of the furrow, as and for the purpose described.

3. An anchoring device for power-driven plows, comprising a carriage, a pulley for the driving-rope on said carriage, a ground-anchor also connected to the carriage and an additional anchor with chains and gearing connecting the said additional anchor to the said driving-pulley, whereby the power of the driving-rope may be employed to traverse the carriage on its wheels, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FRITZ BRUTSCHKE.

Witnesses:

MAX C. STAEHLER,
WOLDEMAR HAUPT.