

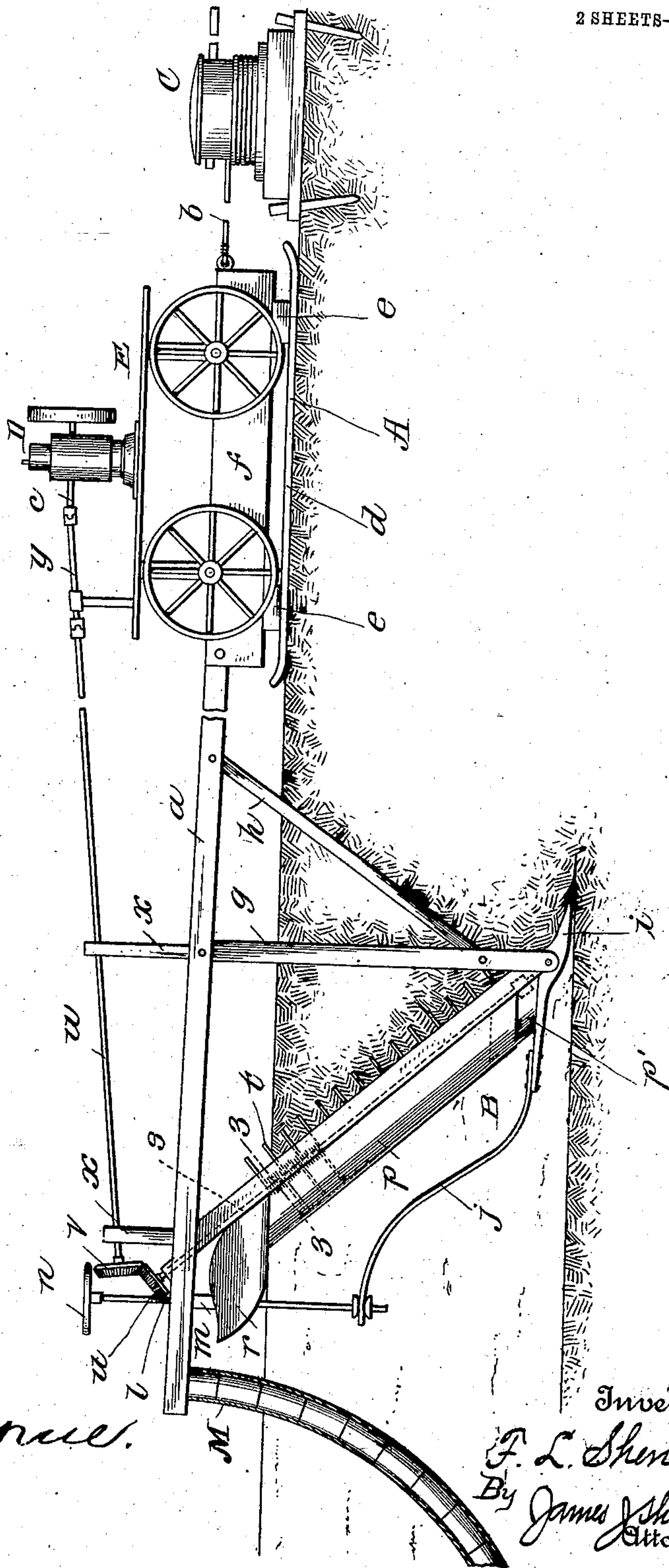
No. 847,703.

PATENTED MAR. 19, 1907.

F. L. SHENEFELT.
DITCHING MACHINE.
APPLICATION FILED DEC. 21, 1906.

2 SHEETS—SHEET 1.

Fig. 1.



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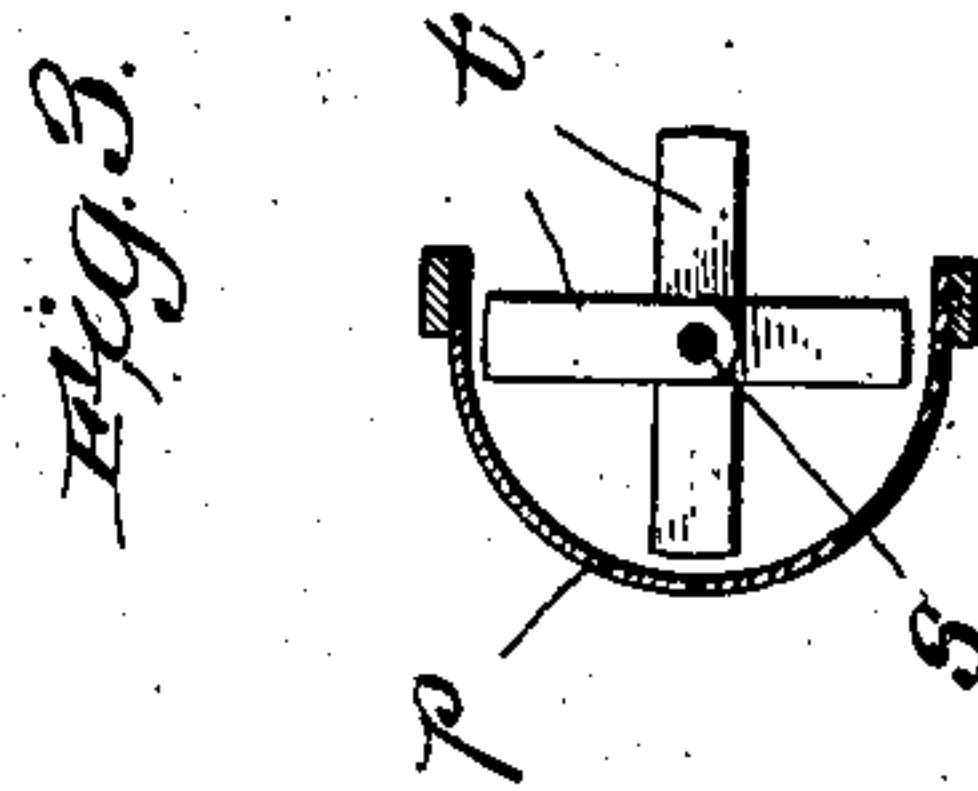
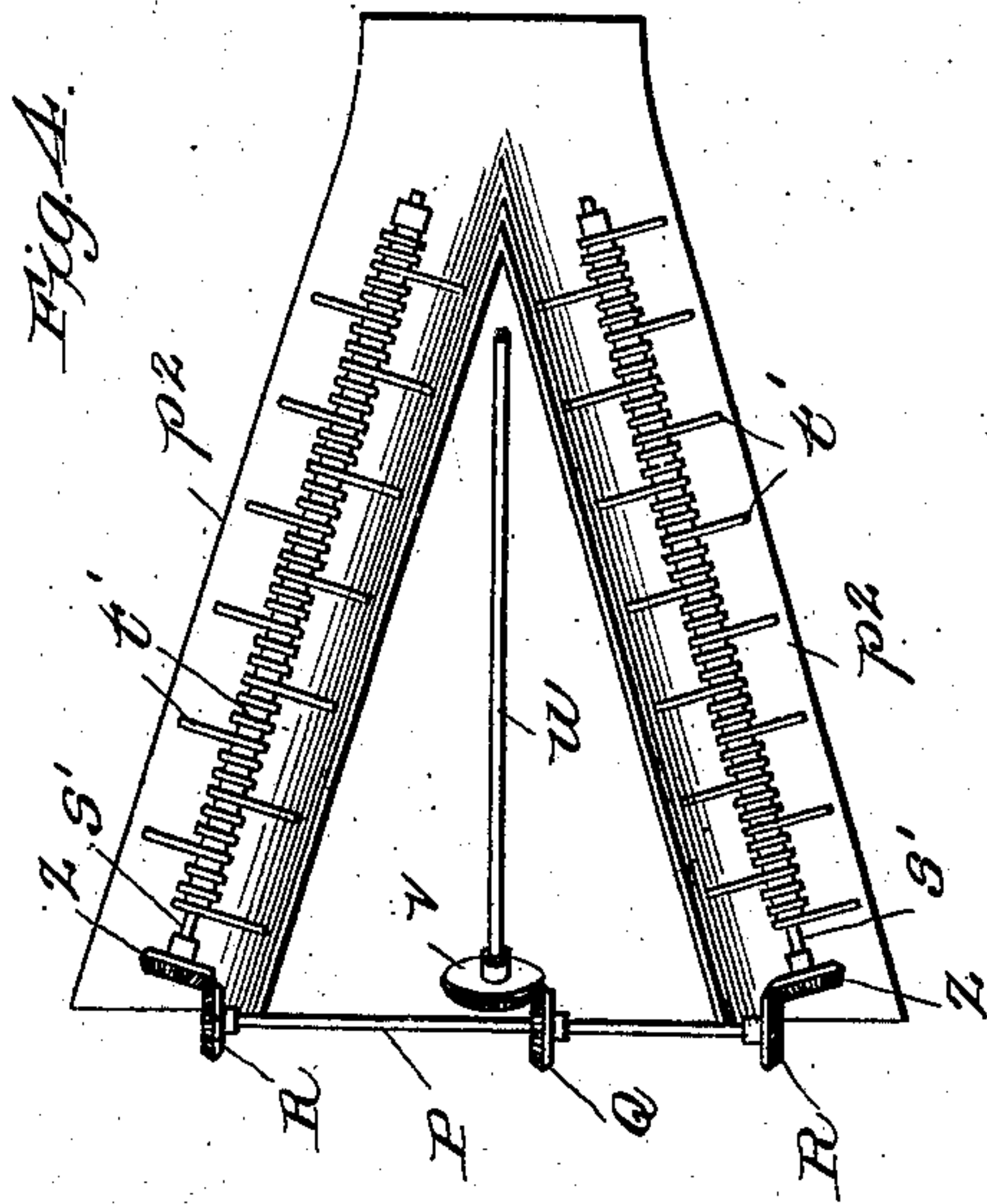
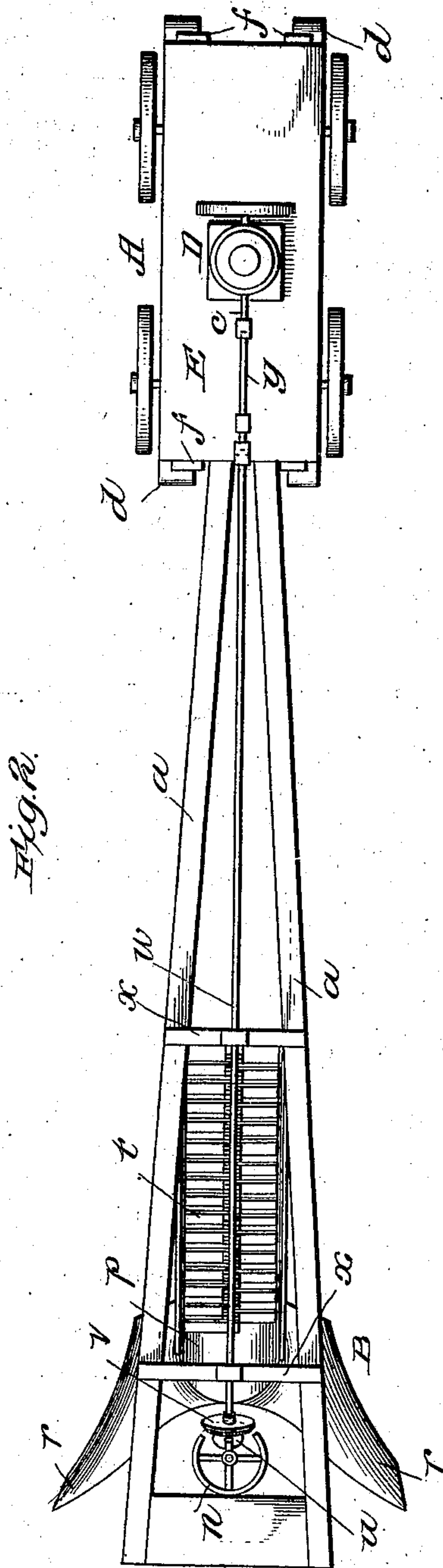
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

FRANCIS L. SHENEFELT, OF ESTHERVILLE, IOWA.

DITCHING-MACHINE.

No. 847,703.

Specification of Letters Patent.

Patented March 19, 1907.

Application filed December 21, 1906. Serial No. 348,939.

To all whom it may concern:

Be it known that I, FRANCIS L. SHENEFELT, a citizen of the United States, residing at Estherville, in the county of Emmet and State of Iowa, have invented new and useful Improvements in Ditching-Machines, of which the following is a specification.

My invention relates to ditching-machines; and it seeks to provide a machine which while simple and inexpensive in construction and requiring but little attention during operation is calculated to expeditiously and properly form a ditch.

The invention will be fully understood from the following description and claims when the same are read in connection with the accompanying drawings, forming part of this specification, in which—

Figure 1 is a view showing a machine constructed in accordance with my invention in side elevation and at work. Fig. 2 is a plan view of the machine with the capstan omitted. Fig. 3 is a detail cross-section taken in the plane indicated by the line 3 3 of Fig. 1 and illustrating the casing and auger of the elevating-conveyer of the plow. Fig. 4 is a detail view of the modified construction, comprising duplex elevating-conveyers and designed for use when an open ditch is desired.

Referring by letter to the said drawings, and more particularly to Figs. 1 to 3 thereof, A is the sled of the machine. B is a plow arranged behind and connected, through beams *a*, with the sled. C is a capstan of the conventional or any other approved construction staked to the ground in advance of the sled A and connected with the sled through the medium of a cable *b* and having for its office to draw the sled A and plow B along, and D is a motor, preferably an internal-combustion engine, carried by the sled A and having a drive-shaft *c*.

In the preferred embodiment of my invention the motor D is mounted upon a wagon E to permit of it being easily and expeditiously moved from one working place to another, and the wagon is arranged on the sled A, which in addition to runners *d* has cross-bars *e*, against the inner sides of which the wagon-wheels rest, and longitudinal bars *f*, arranged on and connected to said cross-bars *e*. From this it will be apparent that when the wagon is positioned on the sled the cross-bars *e* will hold the wagon against endwise movement and the longitudinal bars *f* will hold the wagon against lateral movement

with respect to the sled, and yet the wagon may be readily lifted from the sled when it is desired to quickly haul the wagon and the motor D, which it bears, from one farm or working place to another.

As best shown in Fig. 1 of the drawings, the plow B of the machine is made up of a standard *g* in the form of a colter or knife adapted to cut the earth and grass as the plow progresses, said standard *g* being fixedly connected with and depending from the beams *a*, a brace *h*, also in the form of a colter or knife, extending upward and forward from the lower portion of standard *g* and connected with said standard and the beams *a*, a knife or shoe *i*, pivoted to the lower portion of the standard *g*, so as to be swiveled or otherwise connected to the arm *j* of knife or shoe *i*, and having a thread *l* arranged in a threaded bearing *m* on beams *a* and also having a hand-wheel *n*, through the medium of which it may be conveniently turned to adjust and adjustably fix the knife or shoe *i*, and an elevating-conveyer extending upward and rearward from a point above the rear portion of the knife or shoe *i* and having for its function to receive the earth that is forced into its auger as the plow is drawn forward and carry the earth upward and rearward to the surface and discharge it at opposite sides of the ditch. The said elevating-conveyer is made up of an oblique casing-section *p*, preferably of heavy boiler-iron, fixed with respect to the standard *g* and the beams *a* and open at its forward side, a casing-section *p'*, preferably of heavy boiler-iron, shaped in cross-section like and fitting loosely inside the section *p* and resting on the knife or shoe *i* and having for its function to maintain the continuity of the casing irrespective of adjustment of the knife or shoe *i*, deflectors *r*, connected to the upper end of the casing-section *p* and extending laterally outward and rearward therefrom and designed to throw the raised dirt to opposite sides of the ditch, and an auger having a shaft *s*, journaled in bearings on the standard *g* and beams *a* and also having blades *t*, preferably blades such as best shown in Fig. 3, fixed on the shaft *s*. At its upper end the shaft *s* of the elevating-conveyer is provided with a miter-gear *u*, and with this miter-gear is intermeshed a miter-gear *v*, fixed on a longitudinal shaft *w*, journaled in standards *x*, rising from the beams *a*. Intermediate the rear end of the motor-shaft *c* and the for-

ward end of the shaft *w* is arranged a connecting-shaft *y*, and by virtue of this construction it will be apparent that as the sled A and the plow B are drawn along motion will be transmitted from the motor D to the auger of the elevating-conveyer to enable the said auger to raise dirt to the upper end of the conveyer-casing, as described.

My novel machine is adapted to cut or form a ditch of any depth from a few inches up to a number of feet and of any width desired, according to the size of the machine. In this connection it will be noticed that the beams *a* are pivotally connected to the sled A, so as to swing vertically thereon, while the joint between the shafts *w* and *y* is a universal joint, so as to permit of the plow B being moved up or down, according to the depth that a ditch is to have.

It will be gathered from the foregoing that my novel machine is adapted to expeditiously and properly form a ditch, and this with no effort and with but a minimum amount of attention on the part of the attendant or attendants.

When desirable, my novel machine may be equipped with means for laying tiles in the ditch formed by the plow B. This means is preferably a trough M of a size to fit the tile used, the said trough being connected to and depending from the beams *a* in rear of the plow B and the tiles being introduced into the upper end of the trough, so that the weight of the uppermost tiles will press the lower tiles into place at the bottom of the ditch. I desire it understood, however, that my novel machine is complete without the tile-laying means, and I therefore do not desire to be understood as confining myself to the use of the latter.

In Fig. 4 of the drawings I have illustrated two elevating-conveyers for use where an open ditch is desired. The said conveyers comprise rearwardly and upwardly diverging casing-sections *p*², joined at their forward lower ends, and augers arranged in the casing-sections and having shafts *s*' and blades *t*', and the said conveyers are adapted to be used in the machine shown in Fig. 1 in lieu of the single elevating-conveyer before described. The augers of the duplex conveyers shown in Fig. 4 are provided at the upper ends of their shafts *s*' with miter-gears *z*, and said augers are driven from the shaft *w* through the medium of a miter-gear *v* thereon and a cross-shaft P, having a miter-gear Q intermeshed with the gear *v* and also having miter-gears R intermeshed with the gears *z* on the auger-shafts *s*'.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a ditching-machine, a plow comprising a beam, a combined standard and colter connected to and depending from the beam,

and an elevating-conveyer for raising earth, arranged in rear of the combined standard and colter and connected with the same and the beam.

2. In a ditching-machine, a plow comprising a beam, a combined standard and colter connected to and depending from the beam, a knife or shoe carried on the lower portion of the combined standard and colter, and an elevating-conveyer for raising earth, arranged in rear of the combined standard and colter and connected with the same and the beam.

3. In a ditching-machine, a plow comprising a beam, a combined standard and colter connected to and depending from the beam, a knife or shoe carried on the lower portion of the combined standard and colter and extending forward thereof, and an elevating-conveyer having a casing open at its forward side, arranged in rear of the combined standard and colter and connected with the same and the beam, and an auger in the casing for raising earth that is forced into it as the plow is moved through the ground.

4. In a ditching-machine, a plow having a vertically-swinging knife or shoe, means for adjusting and adjustably fixing the same, a casing-section extending upward and rearward with respect to the knife or shoe and open at its forward side, a similar casing-section resting on the knife or shoe and movable in the lower portion of the first-mentioned casing-section, and an auger in the casing-sections arranged to raise the earth that is forced into it as the plow is moved through the ground.

5. In a ditching-machine, a plow comprising a beam, a combined standard and colter connected to and depending from the beam, a knife or shoe pivoted on the lower portion of said combined standard and colter and arranged to be swung vertically and having a rearwardly-extending arm, a rotary, threaded shaft-bearing in the beam and connected to said arm, and an elevating-conveyer extending upward and rearward from the knife or shoe and the lower portion of the combined standard and colter and arranged to raise the earth that is forced into it as the plow is moved through the ground.

6. In a ditching-machine, a plow comprising a beam, a combined standard and colter connected to and depending from the beam, a knife or shoe pivoted on the lower portion of said combined standard and colter and arranged to be swung vertically and having a rearwardly-extending arm, a rotary, threaded shaft-bearing in the beam and connected to said arm, a fixed casing-section extending upward and rearward from the lower portion of the combined standard and colter and open at its forward side and having deflectors at its upper end, a casing-section resting on the shoe or knife and adjustable in the first-mentioned section and also open at its forward

ward side, and an auger in said casing-sections, arranged to raise the earth that is forced into it as the plow is moved through the ground.

5 7. In a ditching-machine, a plow having rearwardly-diverging elevating-conveyers for raising earth that is forced into them as the plow is moved through the ground.

10 8. In a ditching-machine, a plow having diverging casings open at their forward sides,

and augers in said casings arranged to raise the earth that is forced into them as the plow is moved through the ground.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

FRANCIS L. SHENEFELT.

Witnesses:

GEORGE H. OSBORN,
GEO. A. CASE.