J. W. METZ.

Improvement in Ditching Machines.

No. 119,633. Patented Oct. 3, 1871.

Fig. 1.

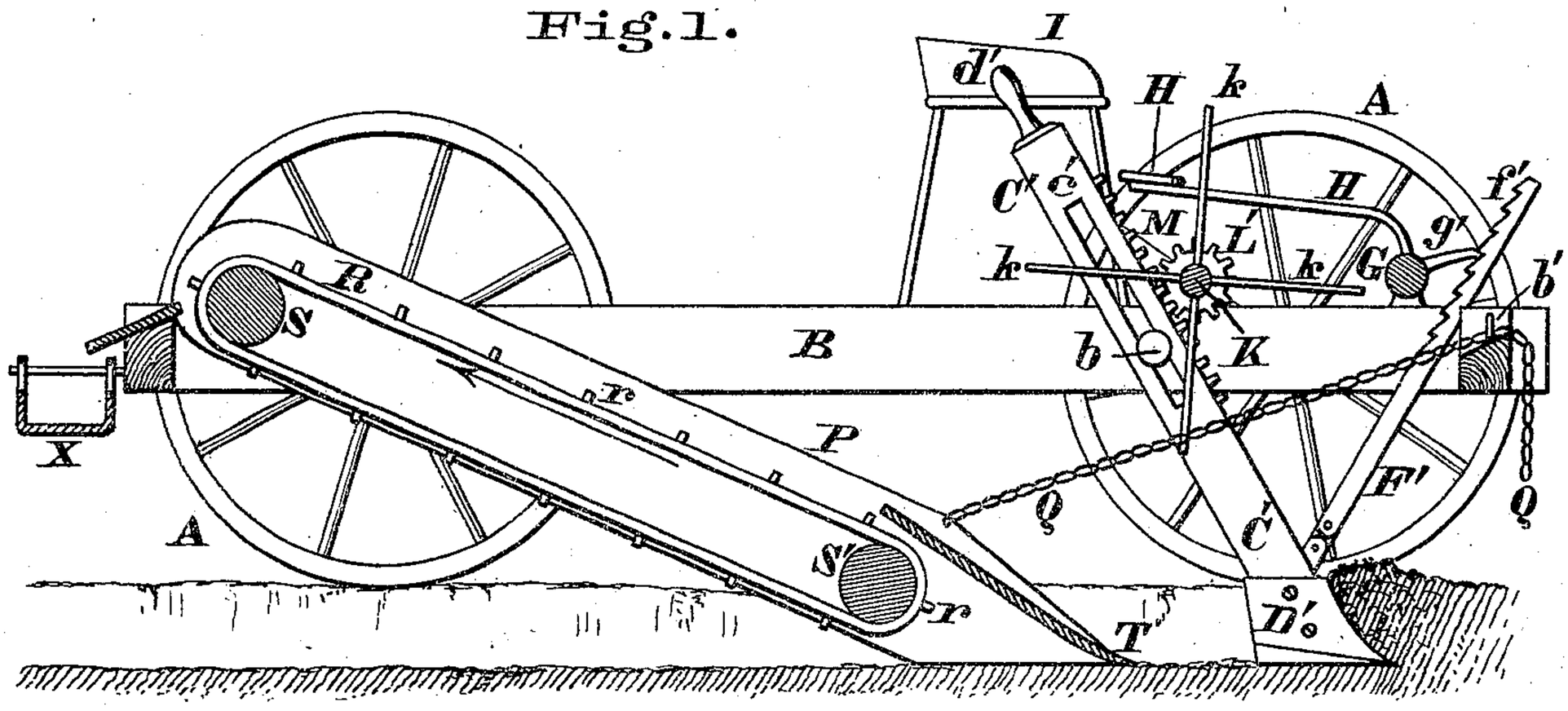


Fig. 2.

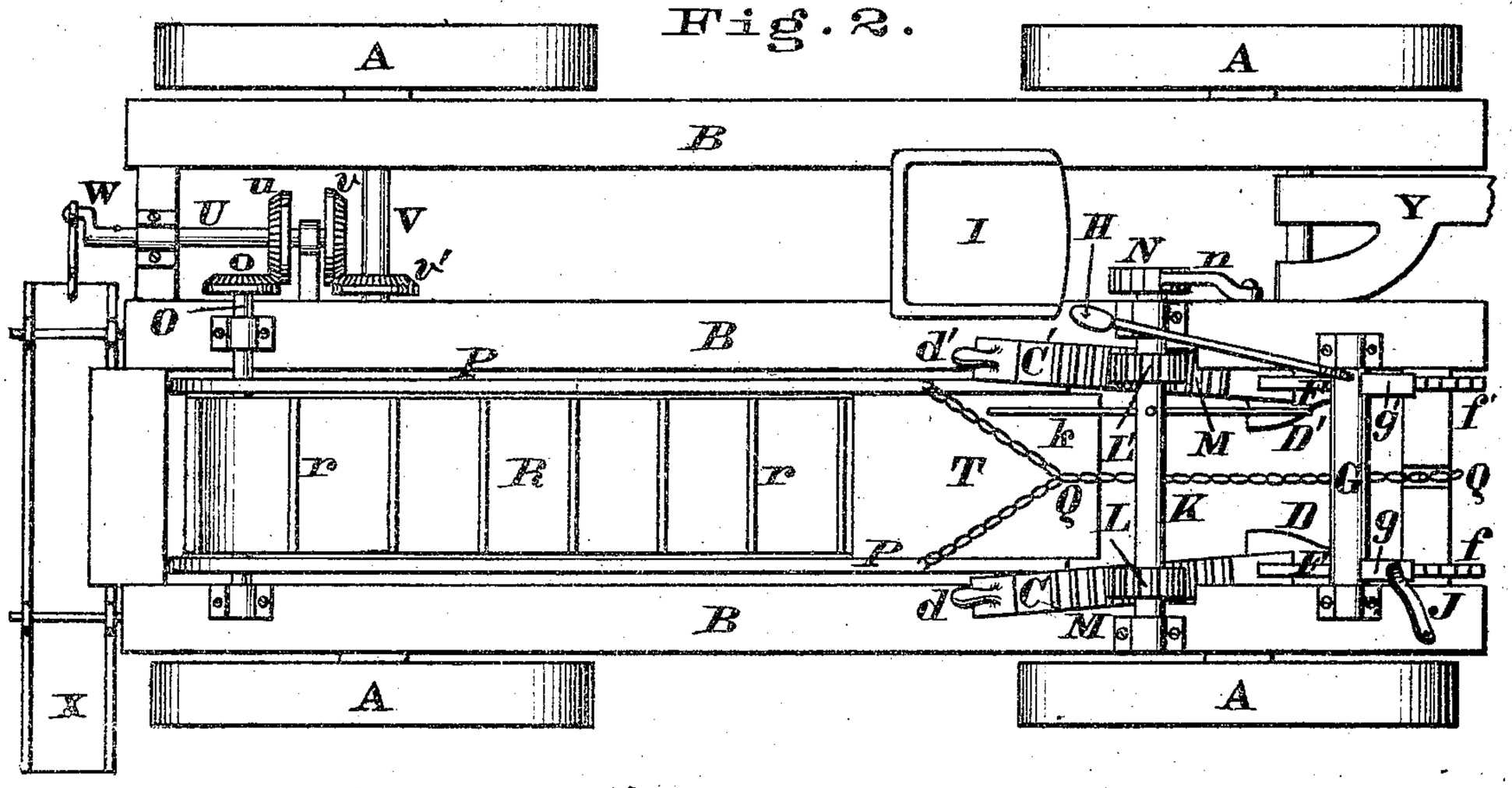
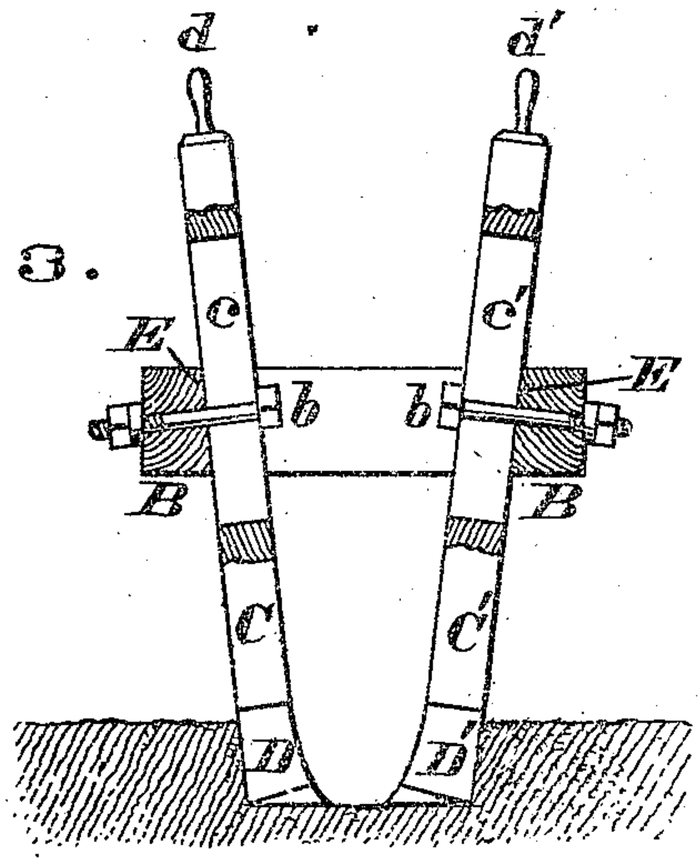


Fig. 3.



J. W. Metz

INVENTOR.

By Knights Bros.

Attys.

Attest.

Jas. H. Layman.

John Knight

119,633

UNITED STATES PATENT OFFICE.

JOHN W. METZ, OF STOUT'S, OHIO.

IMPROVEMENT IN DITCHING-MACHINES.

Specification forming part of Letters Patent No. 119,633, dated October 3, 1871.

To all whom it may concern:

Be it known that I, JOHN W. METZ, of Stout's Post Office, Adams county, Ohio, have invented certain Improvements in Ditching-Machines, of which the following is a specification:

This invention relates to that class of implements whose excavating devices consist of shares that are attached to the lower ends of stout beams or sheaths; and my invention comprises an arrangement of racks, pinions, ratchet-bars, and pawls, whereby said sheaths can be raised and lowered or set at any desired inclination, the details of these appliances being hereinafter fully described.

Figure 1 is a longitudinal section of my improved ditching-machine. Fig. 2 is a plan of the same, and Fig. 3 is a transverse section through the main beams of the implement in the plane of the sheaths.

The ground-wheels A carry a stout frame, B, to which are secured the operative parts of the machine, the excavating devices of which are constructed as follows: The forward part of this frame is provided with two stout bolts, *b*, which traverse slots *c c'* in sheaths C C', whose lower ends are furnished with shares D D' of any approved form, while their upper ends terminate in handles *d d'*. The inner sides of the beams B are chamfered off, as seen at E in Fig. 3. so as to cause the sheaths C C' to converge toward their lower ends, which arrangement serves to impart a suitable inclination to the sides of the ditch. These sheaths have a rearward inclination, whose slope or pitch is regulated by the following devices: Attached near the lower ends of the sheaths C C' are bars F F', whose upper portions are provided with ratchets *f f'*, with which are adapted to engage pawls *g g'* that project from a rock-shaft, G, the latter being capable of being operated by a treadle, H, which is convenient to the driver, who occupies a seat, I. These pawls are maintained in gear with the ratchets *f f'* by a spring, J, although a weight, if preferred, may be substituted for said spring. Journaled in the beams B is a shaft, K, carrying two pinions, L L', that engage with racks M upon the front surface of sheaths C C', and said shaft is also provided with spokes *k*, with which it can be rotated as occasion may require. One end of this shaft is provided with a ratchet-wheel, N, with which engages a pawl, *n*, that serves to prevent any accidental rotation of said shaft. The excavated earth is discharged from the trench in the following manner: Pivoted to a shaft, O, is a gravitating frame, P, within which is fitted a conveyer that is composed of an endless apron, R, having cleats *r* arranged transversely upon its outer surface. This apron or belt passes around two drums, S S', of which the rear one is keyed to shaft O, while the lower one is journaled in the frame P. The front end of frame P is furnished with a scoop or scraper, T. Q is a chain attached to the front end of frame P and engaging over a pin, *b*, that is driven into one of the beams of the machine. Shaft O carries a bevel-pinion, *o*, which meshes with a bevel-wheel, *u*, upon shaft U, and said shaft is rotated by gears *v v'*, the latter being attached to the axle V of one of the rear ground-wheels of the machine. Shaft U has at its rear end a crank, W, that serves to agitate a trough or spout, X, into which the excavated earth is discharged from conveyer R. This trough or spout may be so suspended from the frame of the machine as to be operated with the least amount of power. Y is the pole or tongue to which the team is attached.

In the first cutting of the ditch the sheaths C C' are set so as to allow of their shares penetrating a suitable depth, and after the end of the trench has been reached the driver, by simply rotating the shaft K by its spokes or handles *k*, can elevate said shares so as to be clear of the ground during the time the machine is being turned around and taken back to the commencement of the ditch. Arrived at this point the driver rotates the shaft K so as to permit the descent of the sheaths, the shares penetrating the ground accordingly, and so increasing the depth of the ditch at every successive cutting. As the sheaths converge toward their lower ends the descent of the shares into the ground causes the sides of the ditch to be sloped at such an angle as will cause them to maintain their shape without caving in. The angle of the sheaths can be changed at any time by the driver depressing the treadle H so as to partially rotate rock-shaft G and cause its pawls *g g'* to disengage from the ratchet-bars F F' *f f'*; and as soon as the proper inclination has been obtained the driver has only to remove his foot from said treadle, when the spring J will depress the pawls, and by their engagement with the ratchets *f f'* maintain the sheaths

at the desired angle. If preferred, the angles of the two sheaths may be varied so as to compel one share to be slightly in advance of the other, or one of the sheaths may be set a little nearer the front of the machine than its companion. The chain Q is slackened as the ditch is deepened, so as to cause the scraper T to operate as near the bottom of the ditch as possible.

I claim—

In combination with the main frame B and its pivot-bolts *b*, the slotted sheaths C C′ *c c′*, ratchet-bars F F′ *f f′*, rock-shaft G *g g′*, treadle H, shaft K *k′*, pinions L L′, racks M, and retaining devices N *n*, for the purpose stated.

In testimony of which invention I hereunto set my hand.

JOHN W. METZ.

Witnesses:

GEO. H. KNIGHT,

JAMES H. LAYMAN.

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