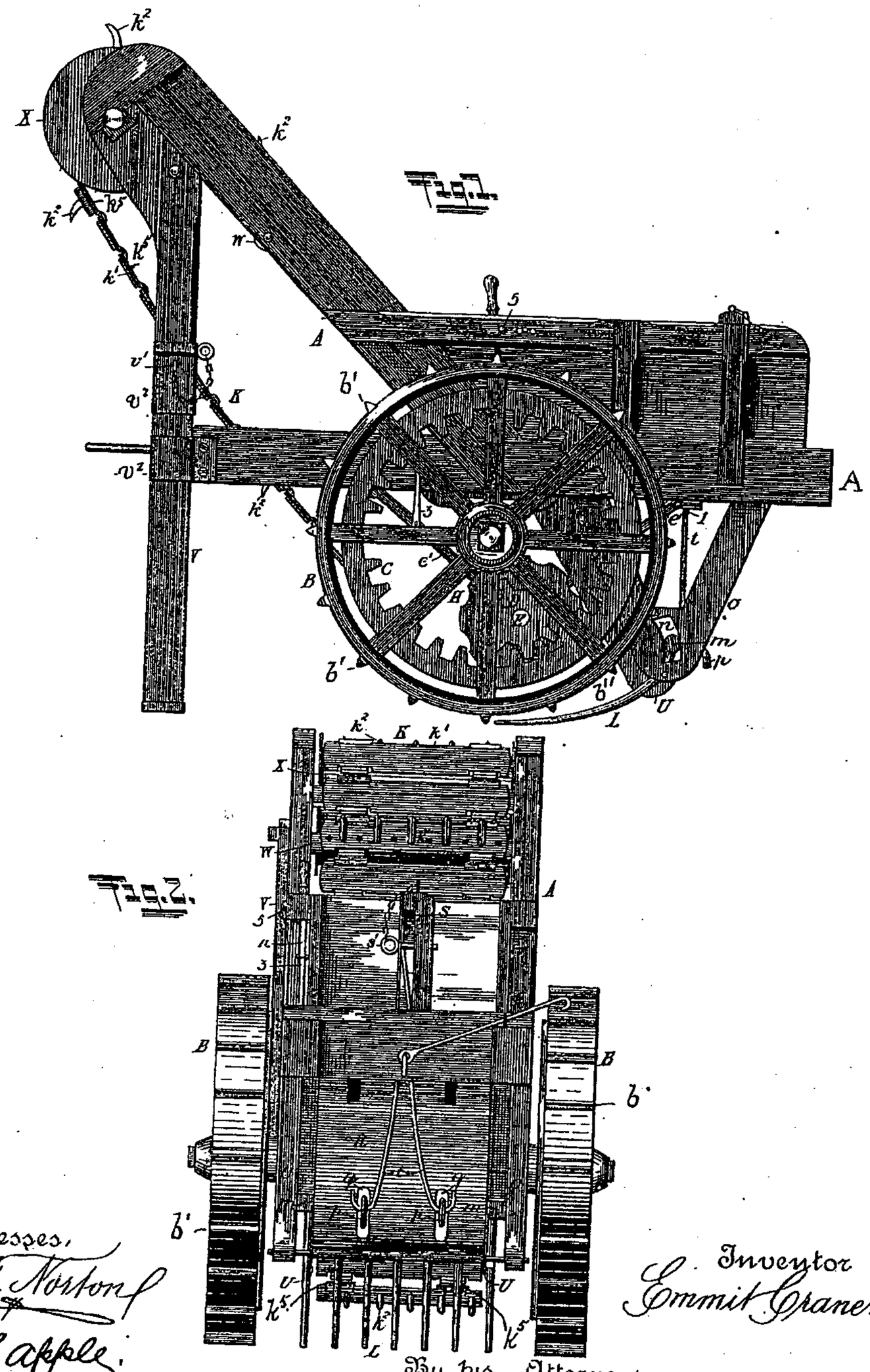
(No Model.)

2 Sheets—Sheet 1.

E. CRANE.

SELF LOADING STONE GATHERER AND POTATO DIGGER.

No. 388,342. Patented Aug. 21, 1888.



Witnesses.
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(No Model.) 2 Sheets—Sheet 2.

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Fig. 5.

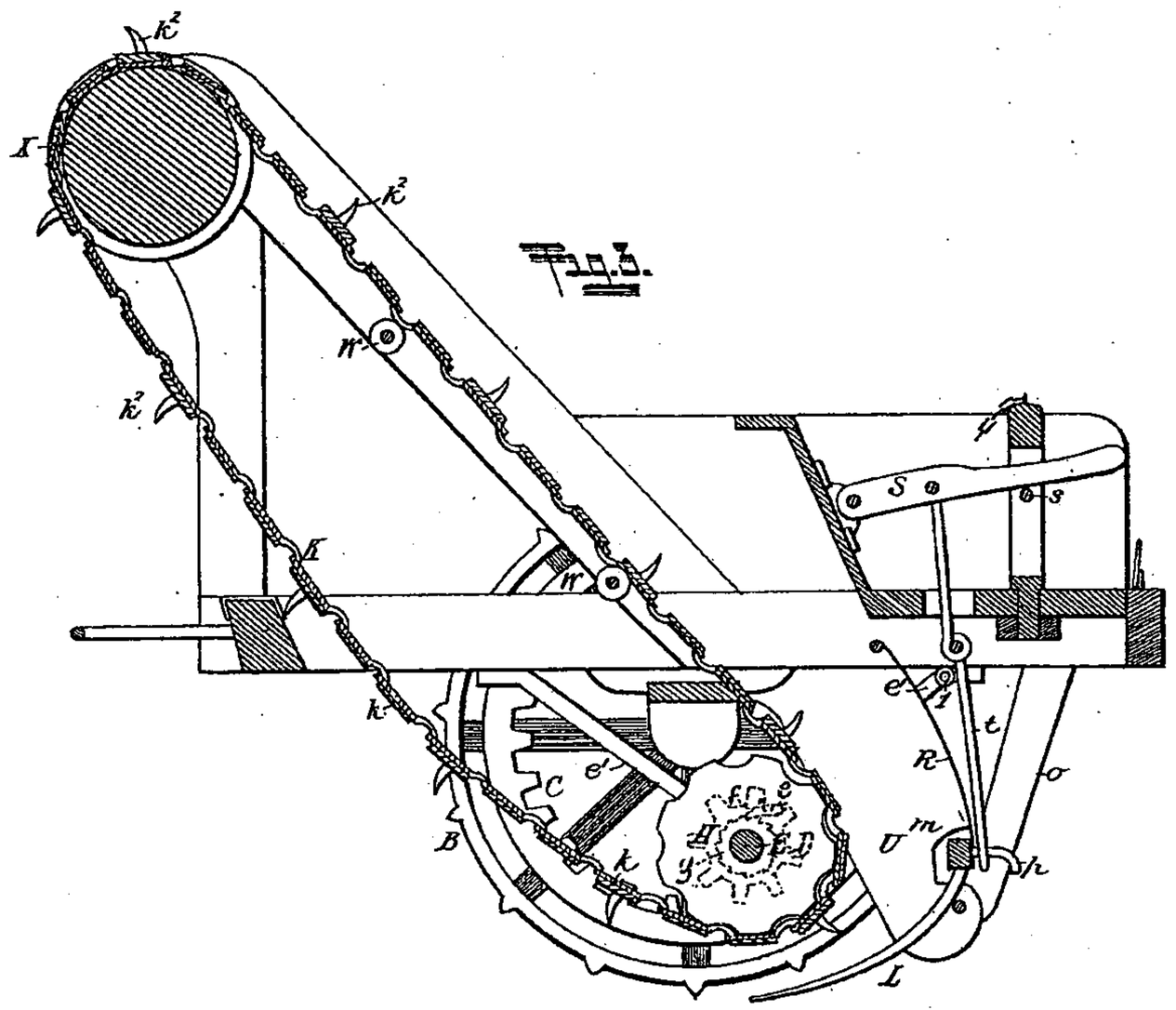
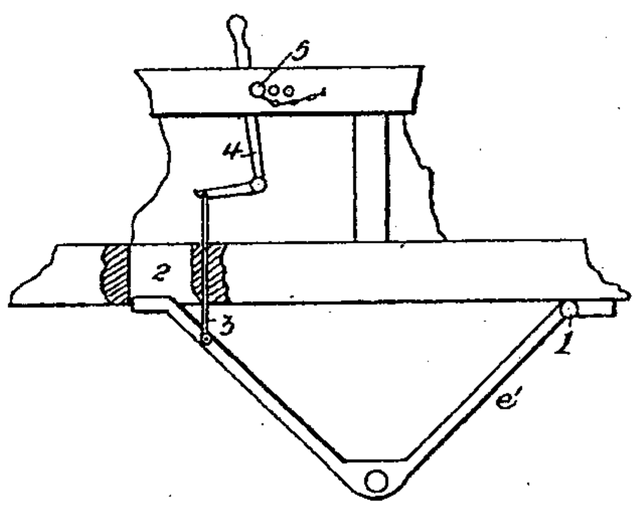


Fig. 4.



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UNITED STATES PATENT OFFICE.

EMMIT CRANE, OF ADDISON, NEW YORK.

SELF-LOADING STONE-GATHERER AND POTATO-DIGGER.

SPECIFICATION forming part of Letters Patent No. 388,342, dated August 21, 1888.

Application filed August 31, 1887. Serial No. 248,386. (No model.)

To all whom it may concern:

Be it known that I, EMMIT CRANE, of Addison, in the county of Steuben and State of New York, have invented certain new and useful Improvements in Self-Loading Stone-Gatherers and Potato-Diggers; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My invention consists in certain specialties of construction and in certain combinations of devices, which will plainly appear from the following.

In the drawings, Figure 1 is a side elevation of the machine. Fig. 2 is a rear view. Fig. 3 is a vertical central section, and Fig. 4 a detail view showing a means for putting the gear-wheels out of engagement.

A is a lever-frame hung and centered on the axle or axles of a pair of traction-wheels, B B, and it is thus capable of being raised or lowered at either end, as may be found desirable, the preponderance of its weight with its attachments being forward of its axle, and the whole machine being intended to be attached to the rear of a wagon and to deliver into it the stones, &c., which it may gather, thus being not only an automatic picker, but also a self-loader.

Secured to the inside of each wheel B is a ring, C, having teeth on its interior, and which respectively engages with a small loose gear or pinion, D, which has a spring-pawl, *e f*, these pinions being mounted loosely on a shaft, E, supported in brackets *e'* on the frame. Each of these pawls engages with its respective ratchet, *g*, secured, respectively, near the ends of this shaft, and when the machine is moving forward, sprocket-wheels H H on a shaft, I, are caused to revolve, and thus to actuate the endless gatherer and delivery-chain K; but when the machine is moved backward the pawls ride over their ratchets, and the shaft I, the sprockets, and the chain are not operated, but left in repose.

The endless chain K will be presently described.

L is the rake, and its head *m* has its end bearings in arched slots *n*, made in the pendent bracket *o*, secured to the frame. Hooks or projections *p* on this rake-head, extending outwardly through slots *q* in a curved guide-plate, R, afford means for lifting, lowering, or adjusting the rake by means of a hand-lever, S, which is connected by links or rods *t t* with these hooks, and may be held to its adjusted position by pin *s'*. The guide-plate R arches over the rear end of the endless chain above the rake-teeth, to assist in guiding the stones when picked up and prevent their falling away again, and side pieces, U U, also serve to prevent the stones when picked up from falling laterally off from the chain or rake-teeth.

The endless chain K is constituted of a series of strong metal slats or plates, *k'*, hooked or linked together, and with space enough between them for dirt, but not the stones, to fall through; and some of these plates—say every fourth one—is provided with strong teeth k^2, curved forward, and which serve, when the machine is in action and the advancing rake-teeth have gathered stones, to carry them up over these teeth past the guides R and U, and thence on to the forward or discharging end of the chain, where they are delivered or loaded into the wagon, to which this machine may then be attached. These plates *k*, I prefer to bolt upon the links k^5.

Any desired number of teeth k^2 may be placed on the plate, and the plate itself may have a series of holes, k^4, which can either serve for dirt to pass, or may serve for the insertion of more teeth, if desirable.

The front or heavier end of the frame has an adjustable post or leg, V, provided with a pin, *v'*, whereby such end may be held in an elevated or lowered position. When so lowered, the rake-teeth are thereby raised so as to be out of contact with the earth. When raised, however, the rake-teeth are lowered and brought into proper position to perform their duties of picking up and gathering. This leg V is placed in guides v^2 on the frame, and may be slid up or down on front end of the frame any required distance, and then secured in position by the pin *v'*.

W W are guide and supporting rollers located under the upper part of the chain, and

they serve to prevent its bagging or sagging with its load of stones. The under part of the chain, however, hangs free and needs no such rollers.

X is a roller over which the upper or forward part of the chain passes.

To throw the cog-wheels out of gear, I hinge the brackets *e'*, in which the gear D is supported, as shown at 1, the other end of this bracket being free to be lifted through a slot, 2, in the frame by means of a link, 3, and bent lever 4. When the brackets are thus lifted, they lift the gear D out of engagement with gear C. The lever 4 is secured in any desired position by means of a pin entering one of a series of holes, 5, in the frame.

It will now be seen that by means of a hook or other suitable means this machine may be attached to the rear of any wagon into which it is desired to collect the stones, and that the height of the forward end of the chain conveyer may be raised to any desired degree, as exigencies may require; that the rake-teeth may also be set to the desired adjusted position to do their work properly, as the lay of the land or the sizes of the stones may demand; that when the rake in moving forward collects the stones the teeth on the under side of the chain, moving, as they do, in the opposite direction, or backward, take charge of them and carry them up and beyond the top of these rake-teeth, through the space bounded substantially at top by the arched piece R and at both sides by the plates U U, until they are on top of the endless chain, and thence forward. They are prevented from falling off by the side guards or ledges *z*, of the frame.

The apparatus is also adapted for digging potatoes, and the position to which the tips of the rake-teeth are adjusted determines whether their tips shall enter the ground or not and to what extent.

I claim—

1. In a stone-gatherer, the endless lifting-belt K, adapted for lifting a mass of stones, composed of a series of long metal plates extending across the machine and provided with lifting-teeth curving forward and hooked together, as described, to form a continuous compact bed for supporting and carrying up the stones, and having but a narrow space between the plates for the escape of dirt, such belt extending from end to end of the swinging elevator-frame, all substantially as shown and described.

2. The described means for lifting the pinion-shaft to raise its gear or pinion D out of engagement with the internal gear C, consisting of the combination of the movable shaft E, hinged lever *e'*, bent lever 4, and link 3, all as shown and described.

3. In combination, the frame A, the side pieces, U U, secured thereto, the arched plate or cover R, and lifting devices, as described, connected to hooks *p*, extending from the rake-head through such cover.

4. In combination, the driving-gear C, the endless chain K, operated by a gear-shaft, E, which is adapted to be lifted to take its gear D out of engagement with the driving-gear, and the rake-teeth L, also adapted to be lifted and held in their raised position.

5. In combination, the stone-gathering chain K, constructed as described, its supporting-frame, shaft E, its gear D, and sprocket-wheels H, ratchet *g*, and spring-pawl *e f*, the combination serving to arrest the working of the chain when the machine is backed, all substantially as shown and described.

6. In combination with the two-wheeled chain-carrying frame having its preponderance of weight forward of the axle, the adjustable post V, held in guides on the frame and adapted to slide thereon and to be secured at any desired portion, as and for the purposes set forth.

EMMIT CRANE.

Witnesses:
M. KINNE,
J. D. CLINTON.