

No. 682,987.

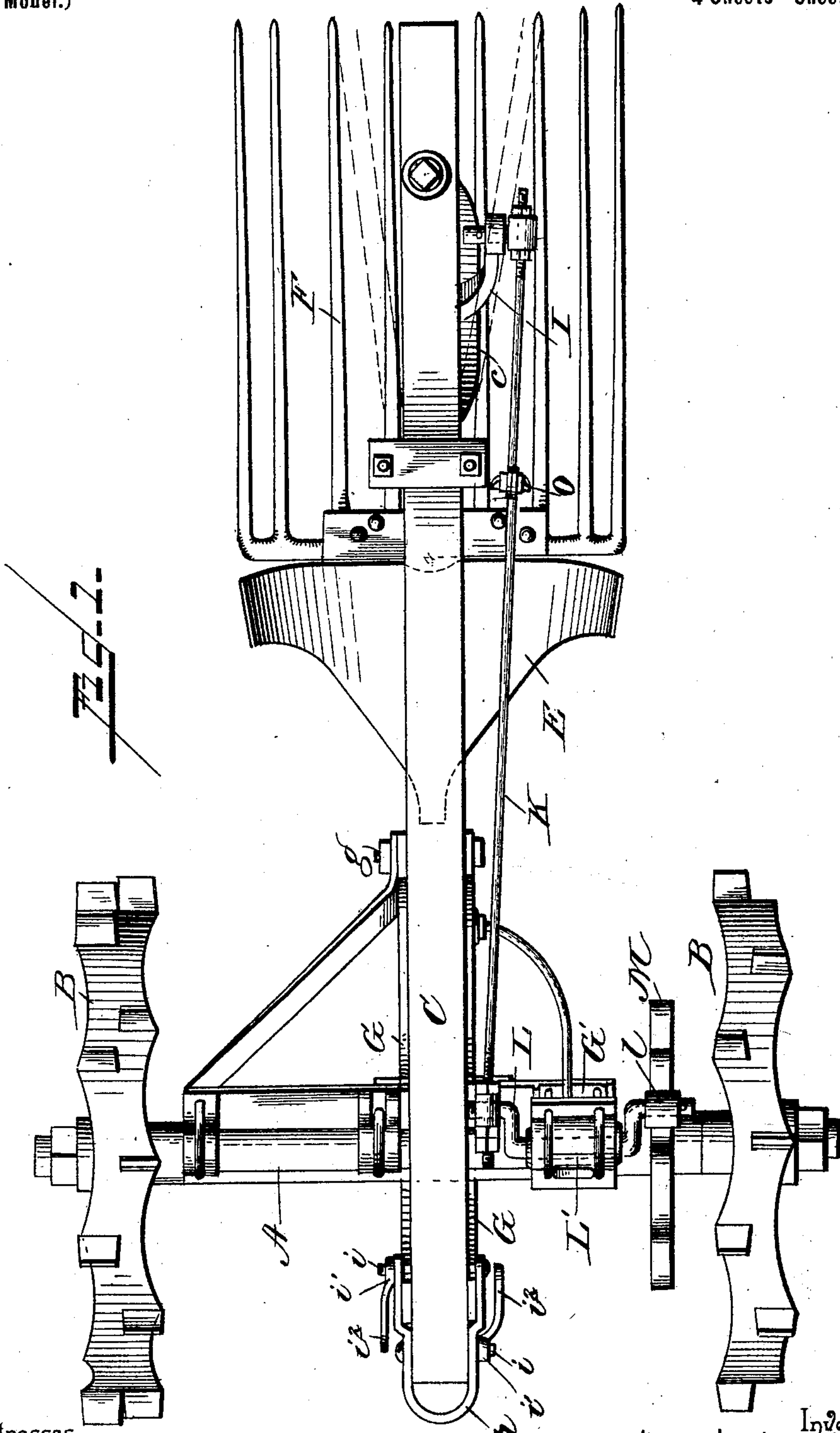
Patented Sept. 17, 1901.

D. Y. HALLOCK.
POTATO DIGGER.

(Application filed June 7, 1901.)

(No Model.)

4 Sheets—Sheet 1.



Witnesses
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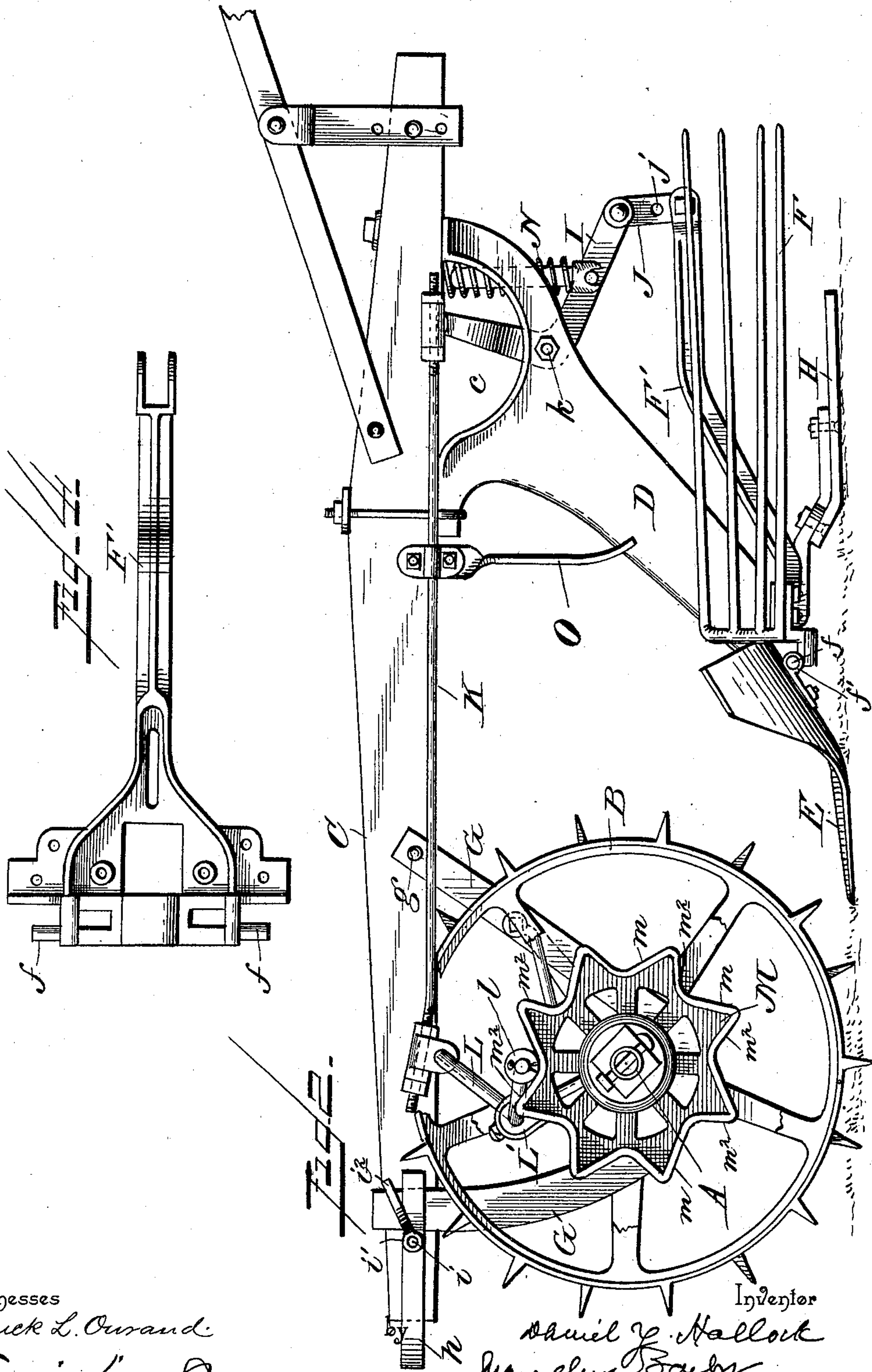
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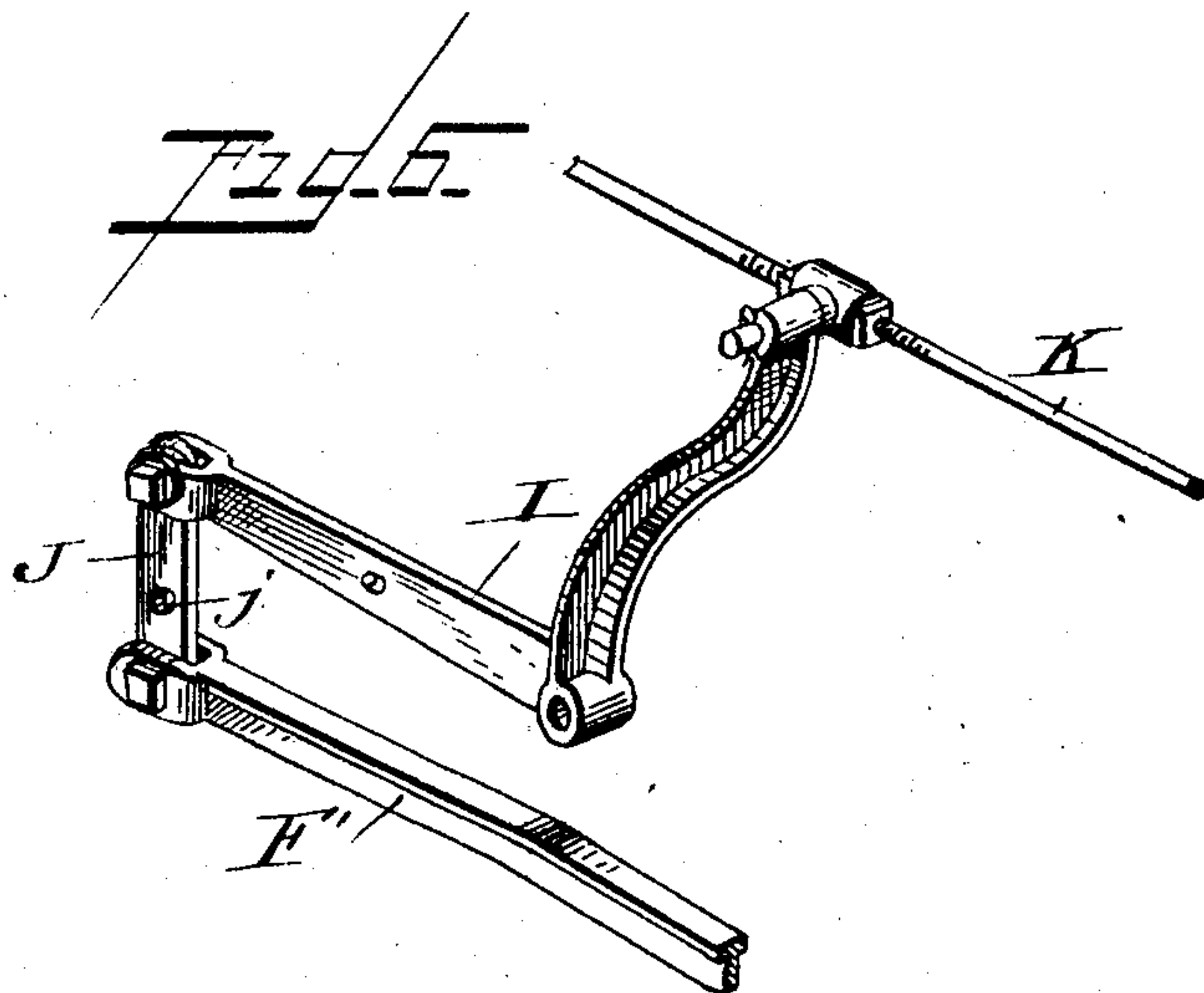
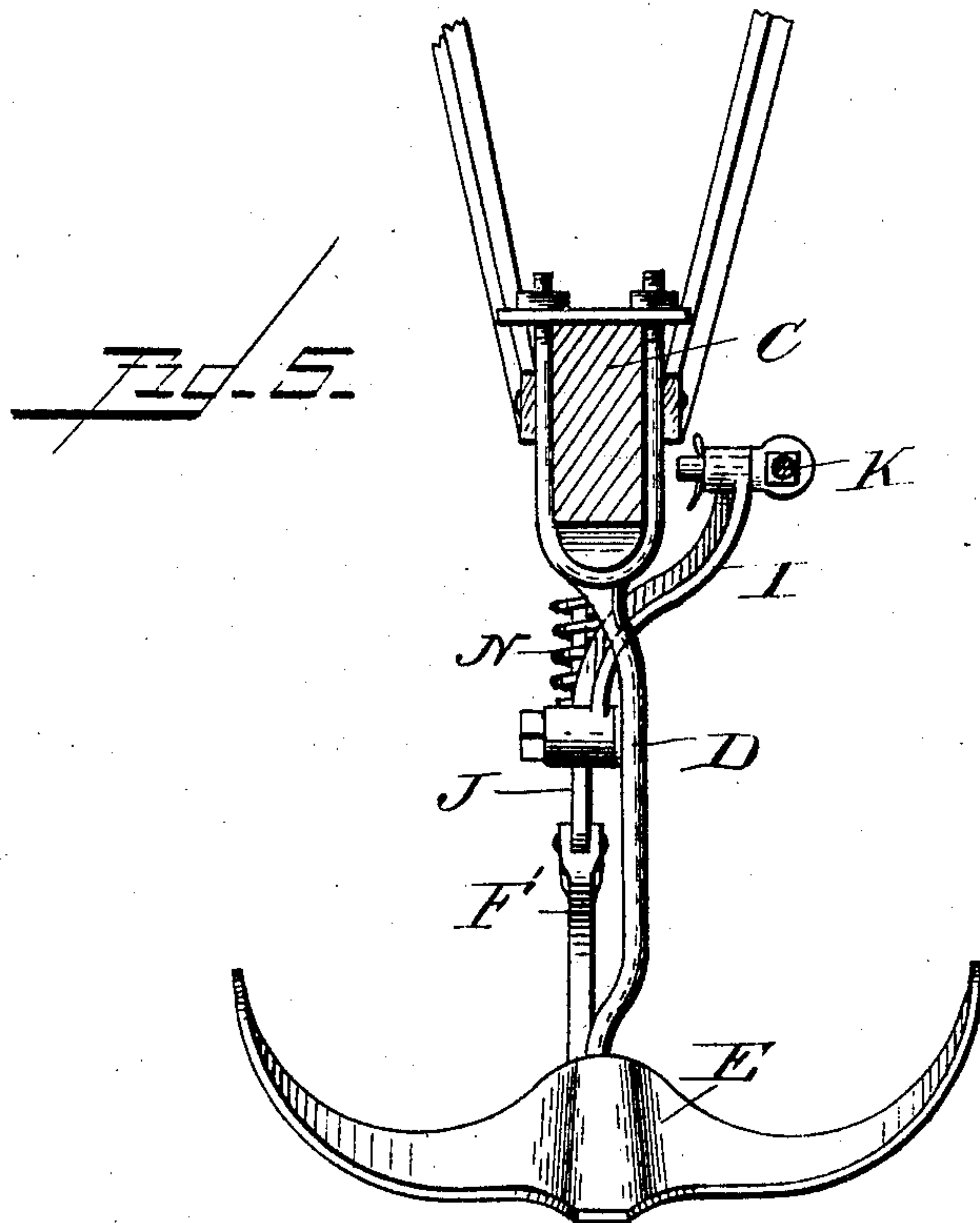
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4 Sheets—Sheet 4.



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UNITED STATES PATENT OFFICE.

DANIEL Y. HALLOCK, OF YORK, PENNSYLVANIA.

POTATO-DIGGER.

SPECIFICATION forming part of Letters Patent No. 682,987, dated September 17, 1901.

Application filed June 7, 1901. Serial No. 63,582. (No model.)

To all whom it may concern:

Be it known that I, DANIEL Y. HALLOCK, a citizen of the United States, and a resident of York, in the county of York and State of Pennsylvania, have invented certain new and useful Improvements in Potato-Diggers, of which the following is a specification.

My invention relates to that class of potato-diggers in which the shovel is combined with a vertically-vibratory hinged screen located in rear of the shovel; and it consists in certain improvements, which will first be described in connection with the accompanying drawings, forming part of this specification, and will then be more particularly pointed out in the claims.

In the drawings, Figure 1 is a plan view of a potato-digger embodying my improvements. Fig. 2 is a side elevation of the same with the spokes of the traction-wheel broken away to expose to view the star-wheel cam. Fig. 3 is a like elevation from the opposite side of the implement with the axle in cross-section. Fig. 4 is a bottom plan of the screen-casting, to which the screen forks or tines are secured. Fig. 5 is a cross-section of the beam with the screen forks or tines removed, designed to show more plainly the lateral deflection of the standard. Fig. 6 is a perspective view of the elbow-lever and its connections for operating the screen.

A is the axle of the machine, upon which are the traction-wheels B, having the customary pawl-and-ratchet connection with the axle, (not shown,) so that they will revolve the axle only when the machine is moving forward.

C is the beam, to which is attached the standard D, that carries the shovel E. Back of the shovel is the screen F, hinged at its front end to the under side of the shovel by pivot pins or studs *f*, which enter bearings *f'*, fastened to the shovel, the screen thus being capable of vertical vibratory motion.

H is the shoe, secured to the standard and extending back beneath the screen.

The beam C is secured in a frame composed of two approximately U-shaped irons or straps G, arranged parallel with one another and made fast to a cross-bar G', journaled on the axle. The beam extends between the two irons G and is pivoted to their rear legs by

a pivot bolt or pin *g*. The front legs of the irons are caused to clasp the beam between them by the legs of a strap yoke or clevis *h*, which are drawn toward each other from opposite sides of the beam upon the irons G (which come between them and the beam) by bolts *i*, each having a clamping-nut *i'*, provided with a handle *i''*, by which the nut can be turned to draw the bolt up tight, and thus firmly clamp the irons upon the beam. By loosening the clamp-nuts *i'* the wheel-supporting frame can turn upon its pivot *g'* and can thus be raised or lowered with reference to the beam to adapt the shovel to different depths of work. By tightening the clamp-nuts the wheel-supporting frame will be held securely in its adjusted position.

That portion of the standard D between the beam and the shovel is deflected laterally to one side of a central position, thus permitting the larger portion of the soil taken by the shovel to pass to one side of the standard, and thereby securing a better clearance for trash and vines. It also allows of bringing the major portion of the screen-operating mechanism directly under the beam and over the longitudinal center of the screen.

The screen is vibrated vertically by means of suitable mechanism for that purpose, which may get its motion from the axle or one of the traction-wheels. In the present instance I employ for the purpose a star-wheel cam M, which is fast to and revolves with the axle and which through suitable connections is caused to actuate the screen. These connections may be varied considerably. I prefer to employ for the purpose an elbow-lever I, pivoted at *k* to the standard D and jointed at one end to a connecting-link J, which at its other end is jointed to the arm F' of the screen F. The other arm of the lever is bent laterally, so as to extend through a top opening *c* in the standard to the opposite side of the standard, where it is jointed to one end of a longitudinally-reciprocating pitman-rod K, which extends alongside of the beam. The opposite or front end of this pitman-rod is jointed to one arm of a crank L, mounted in a bracket-bearing L', attached to the frame part G'. The other arm of the crank is provided with a friction-roller *l*, which is in the path of the star-wheel cam M, the teeth of

which act to move the pitman-rod in a direction to lift the screen. The movement of the screen in the opposite direction is caused by a spring N, which is compressed when the screen rises and which when the latter is released will force it down suddenly and violently. The teeth of the star-wheel cam are shaped as shown, the longer and more sloping face m being that which forces the pitman-rod to move in a direction against the stress of the spring, while the shorter and more vertical face m^2 permits the spring, when the roller l passes the point of the tooth, to act quickly and with full force to produce the concussive action desired. If the screen should drop by gravity merely, then the soil on the screen would drop simultaneously and concurrently with the latter; but by using the spring the screen is forced down so suddenly that it drops in advance of the soil upon it and is upon its return movement when it meets the soil, which is thus struck violently by the screen. In this way I am enabled to produce more rapid and effective disintegration of the soil, the soil being really kept up in the air all the time except as it becomes disintegrated and falls through the screen. Furthermore, by means of the spring I am enabled to obtain the full benefit of the depressions in the star-wheel cam—that is to say, the moment the roller l passes the point of any one tooth the spring forces it instantly down to the base of the tooth, whereas if merely gravity were depended on the roller would descend so slowly that it would strike the longer or more sloping face of the next tooth about half-way up to the point, and thus the range of vibratory movement of the screen would be materially reduced.

Rigidly attached to and moving with the longitudinally-reciprocating pitman-rod K is what I term an "agitator" O, consisting of a stiff depending finger, adapted to play back and forth on one side of the standard D, moving alternately in advance and to the rear of the front edge of the deflected portion of the standard. By its very active motion while the machine is in operation this agitator effectively prevents all accumulation of soil or vines or trash in front of the standard.

As hereinbefore indicated, the beam is adjustable in its supporting-frame to vary the depth at which the shovel will work in the soil. For deep work the rear end of the screen should be normally higher than for shallower work. This is provided for by forming in the connecting-link J two or more bolt-holes j . The bolt which connects the link to the screen-arm F' is represented as in the lowest hole j . To give greater normal elevation to the rear end of the screen, the bolt should be shifted to the upper bolt-hole j . An advantage of this arrangement is that the adjustment in question can be effected without changing the working portion of the elbow-lever I.

Having described my improvements and

the best way now known to me of carrying the same into effect, I state, in conclusion, that I do not limit myself narrowly to the structural details hereinbefore set forth in illustration of my invention; but

What I claim herein as new, and desire to secure by Letters Patent, is as follows:

1. In a potato-digger, the combination of the beam; the shovel centrally attached to the standard; the standard attached to the beam and having that portion of it between the shovel and the beam laterally deflected to one side of the longitudinal middle of the shovel so that the greater portion of the shovel will lie to one side of the standard; and a vibratory screen attached to said standard and located behind the laterally-deflected portion of the standard, which latter is interposed between the shovel and the screen, substantially as hereinbefore set forth.

2. The combination with the beam, the axle and wheels and the beam-supporting frame journaled on said axle, of the standard, the shovel, the hinged screen, the star-wheel cam fast on the axle, the crank mounted in a bracket-bearing on the frame and adapted to be operated by said cam in a direction to lift the screen, the longitudinally-reciprocating pitman-rod jointed to one arm of the said crank, the elbow-lever pivoted to the standard, and having one of its arms jointed to the other end of said pitman-rod, the link jointed at one end to the other arm of said elbow-lever and at the other end to the screen, and a spring for forcing the screen downward after having been lifted by the action of the cam, under the arrangement and for joint operation as hereinbefore shown and set forth.

3. In a potato-digger, and in combination with the beam, the standard and the shovel rigidly secured to the standard, a screen arranged in rear of the shovel and hinged so as to be capable of vertical vibration independently of the shovel, an operating-cam and connections whereby the screen is alternately lifted and released, and a spring whereby the screen is forcibly and suddenly depressed immediately on its release, as and for the purposes hereinbefore set forth.

4. In a potato-digger, the combination with the beam, the standard, the shovel and the hinged screen capable of vertical vibration, of mechanism, including a longitudinally-reciprocating pitman-rod, for imparting vertical vibratory movement to the screen, and an agitator-finger, attached to and moving with the pitman-rod and arranged and adapted to operate in connection with the standard, substantially as and for the purposes hereinbefore set forth.

In testimony whereof I have hereunto set my hand this 5th day of June, 1901.

DANIEL Y. HALLOCK.

Witnesses:

S. WM. JENNINGS,
SAMUEL H. STROCK.