(No Model.)

C. J. CUMMINGS.

POTATO DIGGER.

No. 332,644. Patented Dec. 15, 1885.

FIG-1-

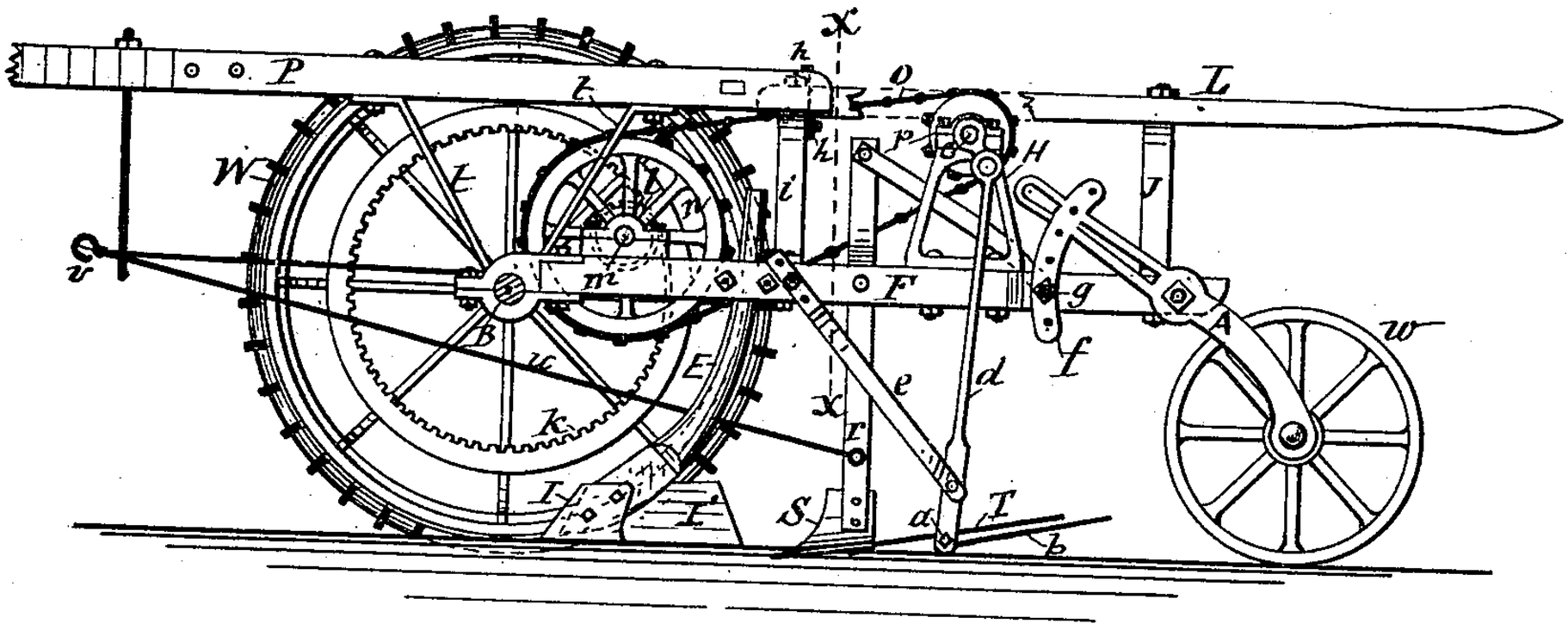


FIG-2-

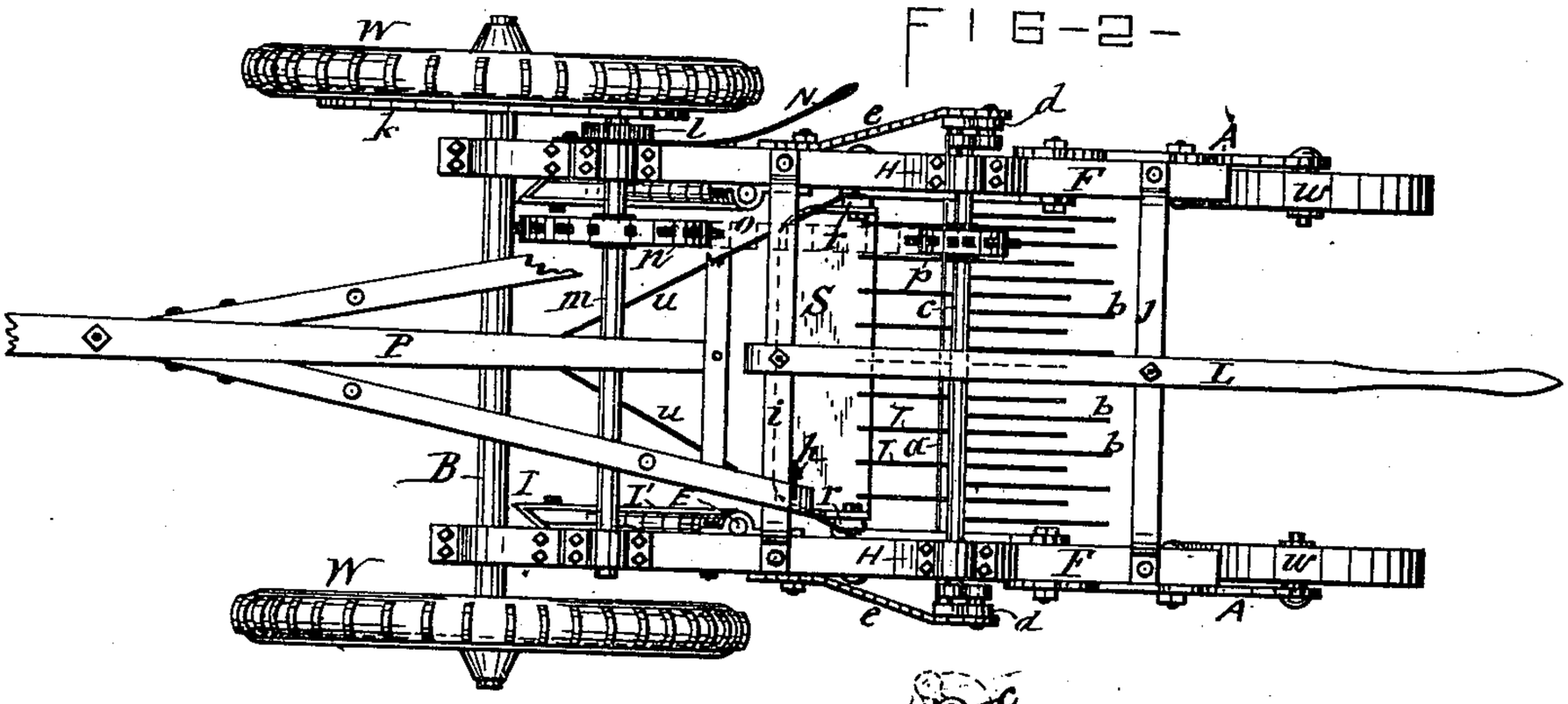


FIG-3-

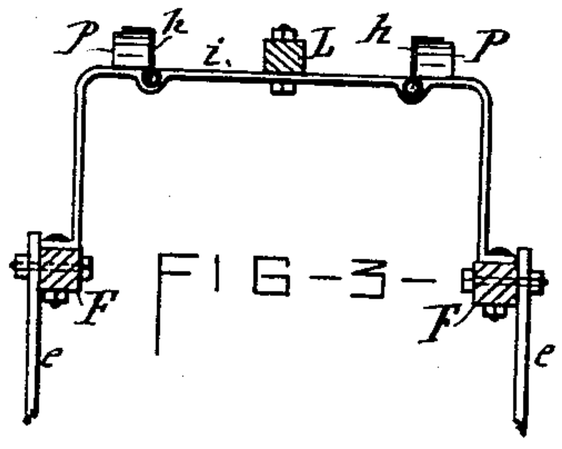
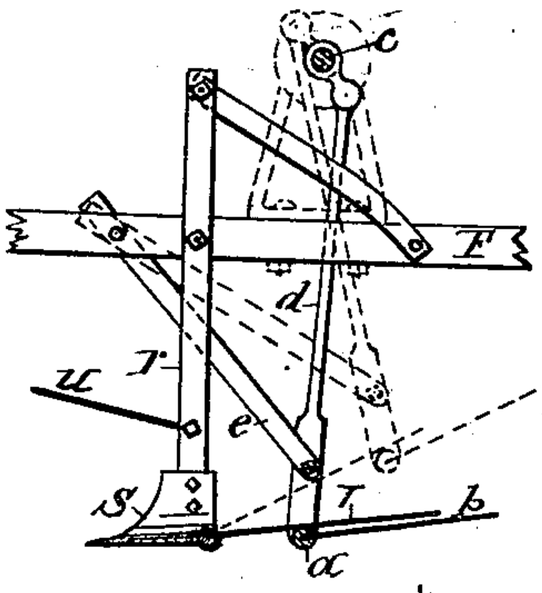


FIG-4-



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UNITED STATES PATENT OFFICE.

CHARLES J. CUMMINGS, OF PREBLE, NEW YORK.

POTATO-DIGGER.

SPECIFICATION forming part of Letters Patent No. 332,644, dated December 15, 1885.

Application filed June 19, 1884. Serial No. 135,379. (No model.)

To all whom it may concern:

Be it known that I, CHARLES J. CUMMINGS, of Preble, in the county of Cortland, in the State of New York, have invented new and useful Improvements in Potato-Diggers, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to the class of potato-diggers in which a scoop passes under the potatoes and passes the same, together with the inclosing earth, to separating devices at the rear of the scoop.

This invention has more particular reference to such machines in which the separation of the earth from the potatoes is effected by rearwardly-projecting oscillatory tines.

My invention consists, first, in improved means for transmitting motion to the said tines, whereby the operation thereof is rendered more effective; and, secondly, in a novel arrangement of devices for supporting and guiding the machine, all as hereinafter more fully described, and specifically set forth in the claims.

In the annexed drawings, Figure 1 is a side elevation of my improved potato-digger with the nigh traction-wheel removed to better illustrate the more essential parts of the machine. Fig. 2 is a plan view of the same with a portion of the pole broken away for the same purpose as aforesaid. Fig. 3 is a transverse section on line *x x*, Fig. 1; and Fig. 4 is a detail view illustrating the operation of the separating apparatus.

Similar letters of reference indicate corresponding parts.

F denotes the frame of the machine, supported at the forward end by the axle B of the traction-wheels W, and at the rear end by arms A, which are pivoted to said portion of the frame, and have journaled on their lower ends the carrying-wheels *w w*, and are provided at their upper ends with segments *f*, which are provided with series of perforations for the reception of pins or bolts by which said ends of the arms are adjustably secured to the frame F. By depressing or raising the latter end of the arms A the rear end of the frame F is lowered or raised correspondingly, as may be required, to bring the digging and separating devices in proper working position. From opposite sides of the frame F, at about midway the length thereof, depend arms *r*, to the lower end of which is attached the scoop S, which is designed to raise the potatoes out of the ground. On one of the traction-wheels is rigidly attached an internally-toothed gear, *k*, in which meshes a pinion, *l*, attached to a shaft, *m*, which is extended across the frame F, and is journaled in suitable bearings on said frame. The pinion *l* is adapted to slide on its shaft, and is provided with a groove engaging a spline on the shaft. By means of a lever, N, said pinion can be thrown in and out of connection with the gear *k* when it is desired to start or stop the motion of the shaft *m*. On the shaft *m* is fastened a sprocket-wheel, *n*, which is connected by a drive-chain, *o*, with a sprocket-wheel, *p*, secured to a shaft, *c*, which shaft is mounted in suitable bearings on brackets H, on opposite sides of the frame F, and is provided on each end with a crank, to which is connected a pendent arm, *d*. With the free end of said arm is connected a brace, *e*, which is pivoted thereon and on the frame F in such relative position as to exert a rearward thrust on the arm *d* during its vertical reciprocating movement received from the crank-shaft *c*. To the lower ends of the two arms *d d* is rigidly attached a cross-bar, *a*, from which projects rigidly rearward a series of tines, *b b*. To the rear edge of the scoop is hinged a series of tines, T T, which rest with their free ends on the cross-bar *a*, and thus partake of the vertical movement of said cross-bar, as illustrated in Fig. 4 of the drawings. The result is that as the potatoes and the inclosing earth pass over the scoop and to the rear, they are first subjected to the action of the vibrating tines T, by which the earth is broken up and caused to drop through the spaces between the tines, and the potatoes are nearly or quite separated from the earth. From the tines T the potatoes drop onto the tines *b b*, the action of which completes the separation of the potatoes from the earth, and throws the potatoes to the rear of the machine, and deposits them on top of the ground.

At opposite sides of the scoop S are small plows or jointers I, which are held in advance of the scoop by standards E, secured to the sides of the frame F. Said plows are arranged

to throw the earth outward and have a prolonged land side, I′, so as to guide onto the scoop S the potatoes and earth lying in front of it.

P represents the pole or tongue, which is secured to braces *t*, mounted on and rising from the forward axle, B. Under the rear end of the tongue P the frame F has connected to it a vertical yoke or arch, *i*, on which are pivoted two hooks, *h h*, which can be hooked onto the rear end of the tongue when desired to sustain the same in a horizontal position. To the rear end of the frame F is attached another yoke or arch, *j*, and to the top of the aforesaid two yokes *i* and *j* is attached a lever, L, which projects rearward from the machine and affords a convenient and an efficient means for the operator to lift the frame F in case it becomes necessary to quickly raise the scoop out of the ground.

u denotes draft chains or rods, connected either with the supporting-arms *r* of the scoop S or with the axle, and having in common a hook, *v*, for the attachment of the double-tree.

The traction-wheels W, I prefer to provide with a transversely-convexed or crowning thread and with transverse ribs on said thread. By practical tests I have found that the convexity of the thread effectually prevents clogging of the wheel.

I am aware that prior to this invention oscillatory tines have been arranged back of the scoop; but such tines were destitute of the requisite support at their free ends, and in some instances the alternate tines were raised and lowered alternately, and thereby produce such large openings between them as to allow both potatoes and earth to drop through.

By my improvement I obtain a simple and effective support for the free ends of the tines, and all the tines are oscillated simultaneously.

L represents a lever secured to the top of the yoke *i* and to a similar yoke, *j*, on the top of the rear portion of the frame F, said lever projecting rearward from the machine and affording simple and efficient means for the operator to control the depth of cutting by the scoop S.

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

1. In combination with the scoop S, the crank-shaft *c*, arms *d*, suspended from the cranks, pivoted brace *e*, connected with said arms *d d*, cross-bar *a*, fixed to the lower end of the arms *d*, tines *b*, affixed to the cross-bar *a*, and tines T, hinged on the scoop and resting with their free end on the said cross-bar, and mechanism for transmitting motion from the traction-wheel to the crank-shaft, substantially as described and shown.

2. In combination with the frame F, supported at opposite ends by wheels W *w*, the yokes *i* and *j*, secured to the frame, the pole P, supported on the axle of the wheels W, the hooks *h h*, pivoted on the yoke *i* and adapted to engage with the pole, and the lever L, fastened to the top of the yokes *i* and *j* and extended rearward, substantially as described and shown.

In testimony whereof I have hereunto signed my name and affixed my seal, in the presence of two attesting witnesses, at Syracuse, in the county of Onondaga, in the State of New York, this 5th day of June, 1884.

CHARLES J. CUMMINGS. [L. S.]

Witnesses:
F. H. GIBBS,
C. BENDIXON.