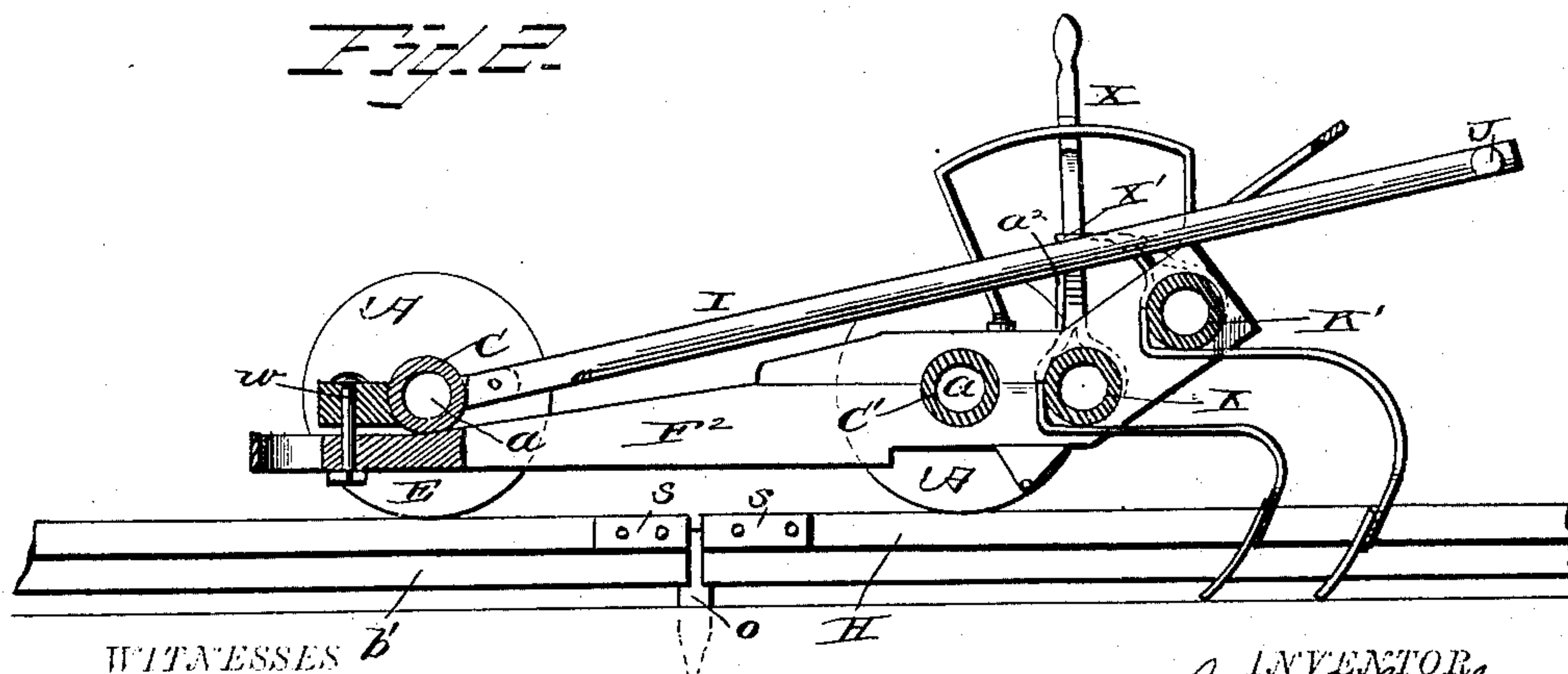
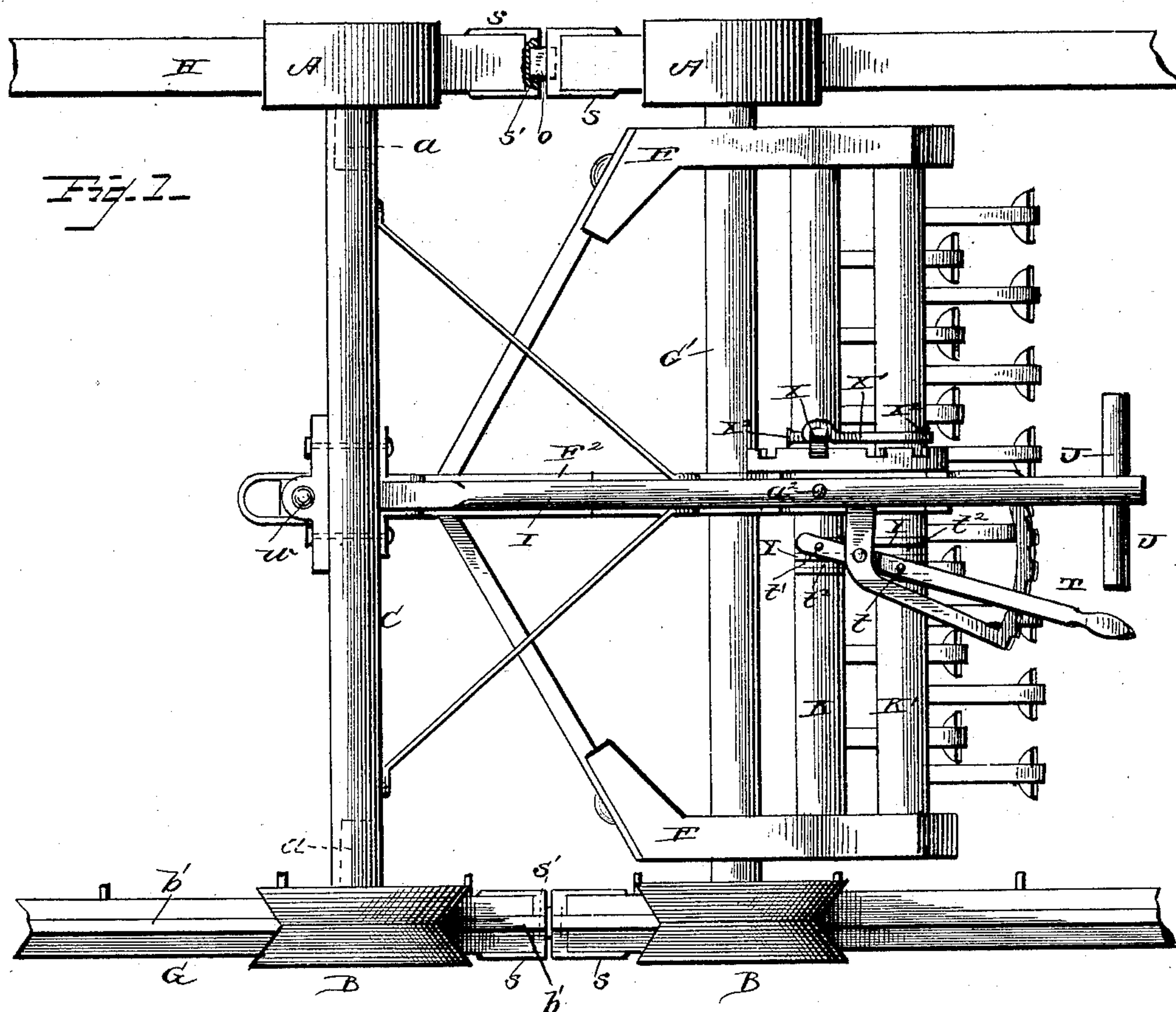


(No Model.)

J. G. SMITH.
SEED DRILL AND CULTIVATOR.

No. 318,048.

Patented May 19, 1885.



WITNESSES
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UNITED STATES PATENT OFFICE.

JOSEPH GRANDISON SMITH, OF KINDERHOOK, ILLINOIS.

SEED-DRILL AND CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 318,048, dated May 19, 1885.

Application filed March 25, 1884. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH G. SMITH, a citizen of the United States, residing at Kinderhook, in the county of Pike and State of Illinois, have invented a new and useful Seed-Drill and Cultivator, of which the following is a specification, reference being had to the accompanying drawings.

This invention has relation to gardening-machines for marking, drilling, and cultivating a garden or field; and it consists in the construction and novel arrangement of parts, as will be hereinafter fully described, and particularly pointed out in the claims appended hereto.

Figure 1 is a plan view of a machine embodying the improvements of my invention in place upon the track in connection with which it is used. Fig. 2 is a vertical longitudinal sectional view of the machine and the supporting-rail of the track.

Referring by letter to the accompanying drawings, the posts *o o*, on which the track-rails are laid, are short posts, and project upward from the ground, as shown in Fig. 2. These posts *o* form the end supports for the guide-rails *G H*, upon which run the wheels *A A* and *B B* of the machine, the ends of the rails being provided with end castings, *s s*, formed with rectangular recesses *s' s'*, which receive the upper ends of said posts, whereby said rails are detachably supported in position. The distance between the rails *G H* corresponds to the width of the machine, or more properly the distance between the wheels *A B*. The object of the rails is not only to guide the machine always in the same track, but is also to lessen the friction by removing the wheels entirely from the ground, and thereby rendering the working of the machine far more easy than it would otherwise be.

I have not given an extended description of the arrangement, advantages, and manner of using the track-rails, but reserved that matter for a separate application filed December 13, 1884, Serial No. 150,302, to which reference is hereby made.

The machine proper is mounted on four wheels, *A A* and *B B*, upon the ends of hollow axles *C C'*, the journals being formed by inserting into the ends of the axles the inner

ends of the skeins *a a a a*, having their outer ends threaded for the reception of suitable nuts (not shown) for securing the wheels in place. As shown in Fig. 1, the rail *G* is the guide-rail, being flanged to receive the grooved wheels *B B*. The other rail, *H*, is plain on its upper face, over which the plain wheels *A A* run while in operation. The forward axle, *C*, is provided with the handle or tongue *L*, having hand-rods *J J*, for the purpose of turning the machine around when the end of the row is reached. This handle is secured upon a stud or pin, *a²*, in the center piece, *F²*, of the frame of the machine, and is keyed fast at its front end to the king-bolt *w*, serving to attach the front axle, *C*, to the frame-piece *E*. Through the end pieces, *F F*, and the intermediate piece, *F²*, pass the hollow rods *K K'*, carrying the gangs of shovels, shoes, &c., as the case may be. The rods *K K'* are adjustable lengthwise by means of the lever *T*, the pins *t t'* of which engage the grooves *t² t²* in the semicircular blocks *Y Y*, secured to the tops of the hollow shafts *K K'*, near the center piece, *F²*. Each of these blocks has two or more grooves, in order that the pins may be shifted from one pair to another to increase or diminish the length of the longitudinal adjustment of the rods *K K'*. By this arrangement the gangs of shovels may be shifted in the direction of the length of the rods *K K'*, the rod *K* shifted in one direction and the rod *K'* in the opposite direction, thus enabling the operator to perform very close adjustments to the rows of plants under cultivation. The gangs of shovels are adjustable vertically through the lever *X* and its rack-bar. This lever *X* is a double or sectional lever, and it enables the operator to accurately adjust the depth to which the cultivators are to operate, or to lift them entirely from the ground when turning the machine or moving from one field to another. The lever *X* consists of a long arm, to which is connected a short arm, *X'*, and the stirrups *X²* at the lower ends of *X X'* are pivoted to the shafts *K K'* to permit their longitudinal adjustment by the lever *T* independently of each other.

When the machine is to be used as a drill, one set or gang of shovels should be removed entirely, and the other one removed and replaced by the gang of drill-shoes. In using

the machine as a marker the gang of marking-hoes only are in place, and when used as a cultivator the two gangs of cultivator-hoes should be in place. The under portions of the

5 frame-pieces F F and F² are bolted onto the upper portions. This is for convenience in manufacturing, and renders it easier to change the gangs of cultivators, &c.

As many rows of plants may be cultivated
10 at one time as there are shovels on the two gangs; but ordinarily it is intended to plow only one-half as many rows as there are shovels, thus allowing two shovels between each two rows.

15 In operation the machine is pushed by hand or drawn by horses, or a rope and windlass may be used to move the machine on the track. If only four rails are used, as the machine advances those in rear must be taken up and
20 placed down in front. The operator may walk behind the machine, controlling the plows by the levers T and X. When the end of a row has been reached, the operator releases the handle from its pin, and, cramping the wheels,
25 permits the machine to turn round like a carriage.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

30 1. In a gardening-machine, the combination, with the rods carrying the gangs of shovels or plows, and provided with the grooved blocks, of the handle-lever carrying pins to engage any one of the grooves on the blocks,
35 so as to increase or diminish the longitudinal adjustment of the rods, as set forth.

2. In a gardening-machine, the combination, with the end bars of the frame and the central cross-piece, of the rods having shovels
40 or plows attached thereto at suitable points of

their length and arranged transversely of the machine and journaled in the end bars and central piece, blocks provided on the face of the rods and formed with two or more continuous grooves, and a handle-lever, pivoted
45 as shown, and provided with pins to engage the grooves so as to increase or diminish the longitudinal adjustment of the rods, as set forth.

3. In a gardening-machine, the combination, with the frame, of the two rods fitted in
50 openings of the latter and carrying shovels or plows, and a handle-lever arranged to engage with the rods, so as to shift one rod in one direction and the other in the opposite direction, and thus cause the plows or shovels of
55 the forward rod to occupy the space between the plows or shovels of the rear rod, as set forth.

4. In a gardening-machine, the combination, with the frame, of the journaled rods carrying the shovels or plows, and a double lever
60 having stirrups connecting with the rods, and arranged to rotate them simultaneously to elevate the plows, as set forth.

5. In a gardening-machine, the combination, with the frame, of the journaled rods carrying the plows or shovels, and levers attached to the rods, the forward lever having an operating-handle, and the rear lever clasp-
70 ing the handle of the forward lever and sliding vertically thereon, so that both rods are operated simultaneously and by the same movement, as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in
75 presence of two witnesses.

JOSEPH GRANDISON SMITH.

Witnesses:

E. U. GAINES,
C. BRADSHAW.