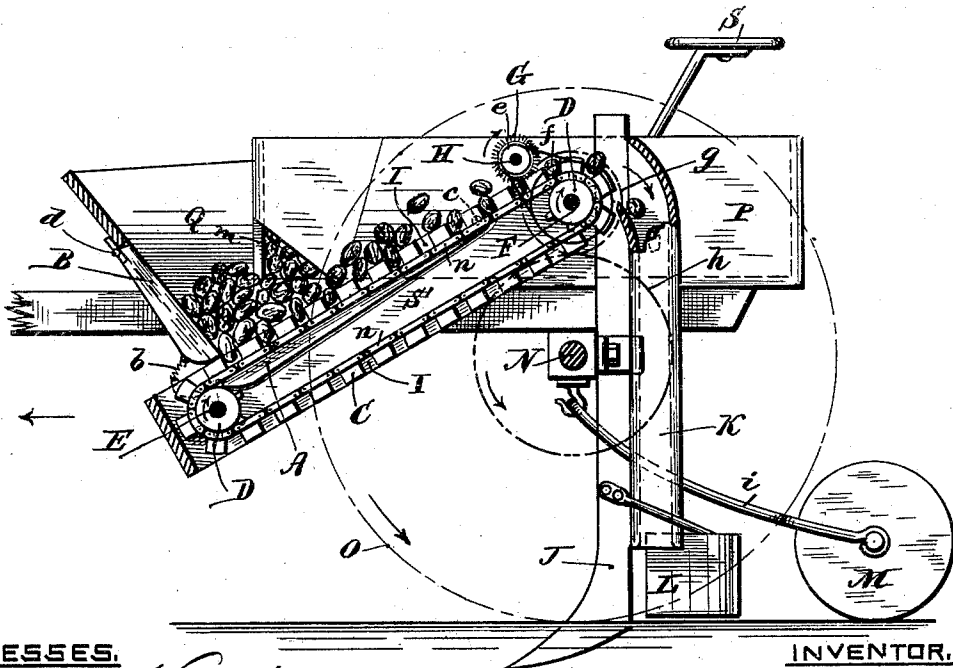
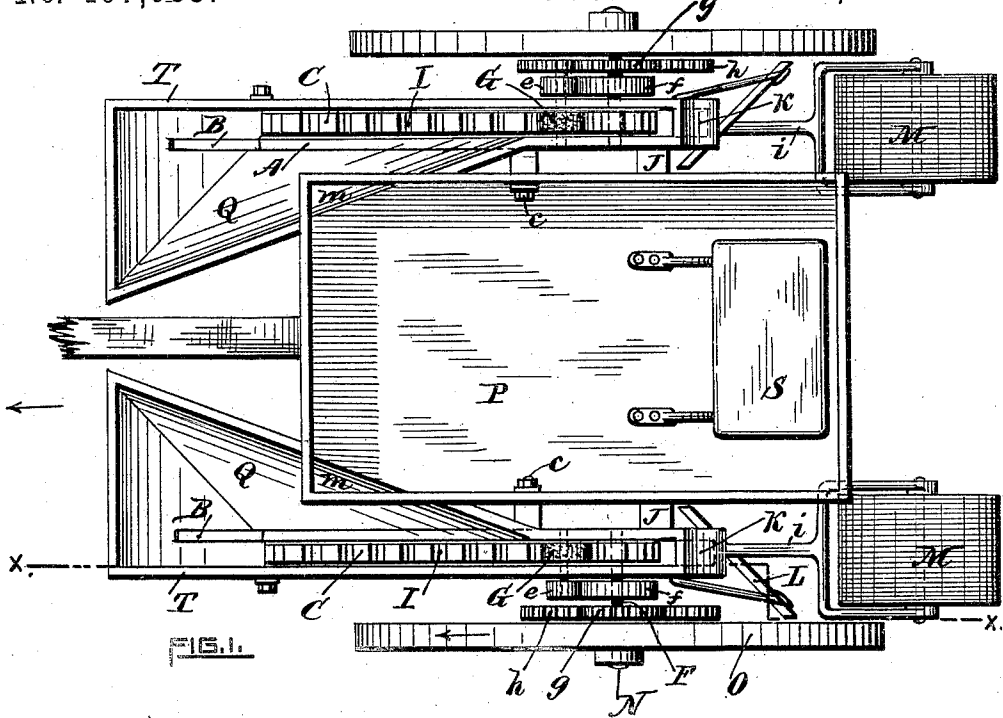


S. ESSEX.
POTATO PLANTER.

No. 467,683.

Patented Jan. 26, 1892.



WITNESSES.

Charles Hennigan
Geo. H. Remington

FIG. 2.

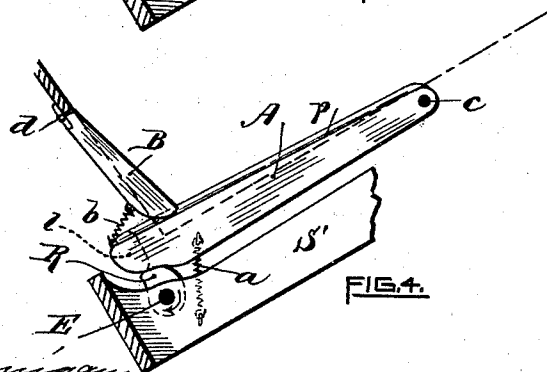
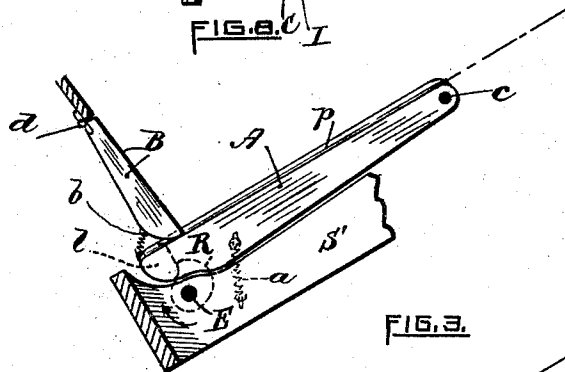
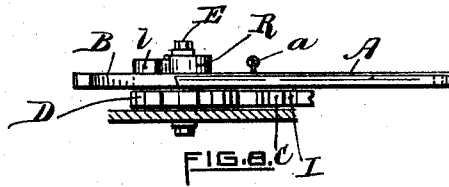
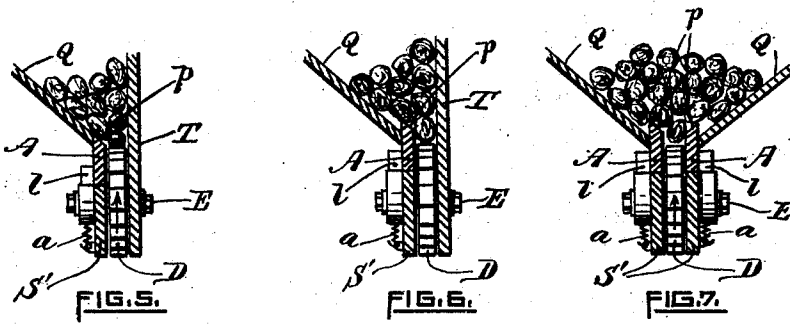
INVENTOR.

Stephen Essex

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WITNESSES.

Charles Hannigan
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INVENTOR

Stephen Essex

UNITED STATES PATENT OFFICE.

STEPHEN ESSEX, OF PROVIDENCE, RHODE ISLAND.

POTATO-PLANTER.

SPECIFICATION forming part of Letters Patent No. 467,683, dated January 26, 1892.

Application filed December 11, 1890. Serial No. 374,269. (No model.)

To all whom it may concern:

Be it known that I, STEPHEN ESSEX, a citizen of the United States, residing at the city of Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Potato-Planters; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as 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 relates to certain improvements in potato-planters of the class which automatically separate potatoes singly from the mass of potatoes and deposit them one by one at regular intervals along a furrow or drill; and it consists, essentially, of an endless conveyer provided with a series of cells or pockets arranged to receive the potatoes singly, in combination with one or more lifting and lateral-pressure-relieving devices located contiguous to the conveyer, all as will be more fully hereinafter set forth and claimed.

The following is a detailed description of my invention and the manner of its operation.

In the accompanying two sheets of drawings, Figure 1, Sheet 1, is a plan or top view of a potato-planter embodying my improvements. Fig. 2 is a side sectional elevation on line *xx* of Fig. 1. Fig. 3 is a side elevation of lifting and lateral-pressure-relieving devices represented as being down. Fig. 4 is a similar view of said devices represented as being up. Fig. 5 is a sectional end view showing the relative position of sprocket-wheel, cam, and lifting and lateral-pressure-relieving device when down, as in Fig. 3. Fig. 6 is the same, the lifting and lateral-pressure-relieving device being up, as in Fig. 4. Fig. 7 is a similar view showing a hopper provided with two longitudinal sides, both beveled, and a lifting and lateral-pressure-relieving device on either side of the conveyer. Fig. 8 is a plan view of Fig. 3, showing the two lifting and lateral-pressure devices, cam, sprocket-wheel, &c.

P represents the wagon-body, which contains the supply of potatoes and pieces of potato, and S the seat upon which the driver sits and with suitable tools pushes the potatoes through openings *m m*, located in the bottom of the front part of the wagon-body, into the hoppers Q Q, which each have a beveled side and end and a vertical side T.

S' and the lower part of T are the retaining sides of the endless-chain conveyer *n n*, mounted on the sprockets D D, which are secured to the shafts E and F, which are journaled in said retaining sides.

C C are the projections upon the endless chain *n n*, which, in combination with said retaining sides, form the rectangular cells or pockets I I.

G is the brush, which brushes out and off the surplus potatoes or pieces of potato which may collect in the cells or pockets or on the endless conveyer. This brush is placed above the inclined conveyer on a shaft H, journaled in the sides of the hopper, and is revolved rapidly by means of a belt leading from pulley *f* on sprocket-shaft F to a pulley *e* on shaft H, and the sprocket-shaft F is driven through gear *g* and gear *h* on the hub of the propelling-wheel O.

It is evident that by properly timing gears *g* and *h* the potatoes or pieces of potato will drop from the cells or pockets of the conveyer at any desirable interval and thus be properly spaced in the drill or furrow.

A is a lifting and lateral-pressure-relieving device in the same plane as the retaining side S', pivoted at C and operated by the cam R, secured to sprocket-shaft E by means of lug *l*, and B is another lifting and lateral-pressure-relieving device similar to and located in the same vertical plane with A, hinged at *d* in the beveled end of the hopper Q, which pressure-relieving device B impinges upon the upper face of A in such manner that when cam R lifts the device A the other pressure-relieving device B is also lifted, as shown in Fig. 4. Said pressure-relieving device A is connected with retaining side S' by the spiral spring *a*, which serves to pull down the said device speedily after the cam ceases to lift it, and *b* is another spiral spring connecting A and B and serving a similar purpose with the

pressure-relieving device B, the parts when in their normal position being fully represented in Fig. 3. The upper edge of A is beveled, as at *p*, so that when the device is
 5 down its upper edge and the beveled side of the hopper Q are in the same plane, as seen in Fig. 5.

K represents the tube, through which the the potatoes or pieces of potato as they come
 10 from the cells or pockets of the conveyer drop into the drill or furrow between the plow and the scraper or coverer.

J is the plow, which opens the furrow or drill.

15 L is the scraper or coverer, which scrapes the dirt turned up by the plow back into the furrow or drill and covers the potatoes.

M represents the roller, which rolls the ground after the scraper or coverer has covered
 20 the potatoes, and it is connected to the axle N by the iron tongue *i*.

The advantage of an inclined conveyer is this: The surplus potatoes or pieces of potato always have a tendency to run back toward
 25 the lower end of the hopper, and thus the conveyer cells or pockets are not liable to be overcharged, nor is the conveyer liable to carry along surplus potatoes or pieces of potato by friction, and the brush is a further safeguard
 30 against overcharging the cells or pockets and sweeps down the incline the surplus potatoes and pieces of potato from the cells or pockets and from the conveyer. Rectangular cells or pockets on the conveyer are manifestly
 35 better than cells or pockets which are sections of spheres or cylinders, because, while the rectangular cell or pocket with each side of the same length as the diameter of a cell or pocket which is a section of a sphere
 40 or cylinder will not receive any larger potato than the cell or pocket which is a section of a sphere or cylinder, yet the opening exposed to the potato is really larger, and in my machine if a portion of the potato once gets
 45 within the cell or pocket the friction of the retaining sides of the conveyer speedily drags the potato entirely within the cell, the retaining sides pulling one way and the conveyer the other.

50 The advantage of the conveyer formed by projections on an endless chain or belt between two retaining sides, besides the above, is that the potatoes are much less liable to be bruised, lose their eyes, &c., for the reason
 55 that when once in the cell or pocket they are protected on every side, except the top, from rough contact, and the friction is manifestly much less than if cups were drawn through the body of potatoes.

60 The advantage of the vertical side to the hopper in the same plane with the vertical retaining side of the conveyer is that it aligns the potatoes along the path of travel of the conveyer and serves as a guide, as they
 65 naturally drop into the cells or pockets, as seen in Figs. 5 and 6.

When one side of the hopper is vertical and in the same plane with the vertical retaining side of the conveyer and parallel with
 70 the path of travel of the conveyer, then as the potatoes move down the opposite beveled side of the hopper and strike across the pathway of the conveyer against its vertical side
 75 the potatoes immediately above and along its pathway of travel receive no vertical support from underneath on the vertical side and manifestly no vertical underneath support
 80 from the opposite beveled side, for the greatest diameter of the selected and prepared potatoes is not great enough to reach the beveled side while they are in contact
 85 with the vertical side, and naturally the only hindrance to the dropping into the pockets or cells beneath of the aligned potatoes along and above the pathway of travel of the conveyer is cohesion and lateral pressure from
 90 potatoes from the opposite beveled side. The vertical side of the hopper in the same plane with the vertical retaining side of the conveyer, the gravity of the potato itself, and the plumb, direct, and downright pressure of the potatoes aligned by the vertical
 95 side of the hopper is generally sufficient to impel the potato into the pocket or cell beneath when it is presented, and by reason of the vertical alignment of potatoes above
 100 the descending potato its (the descending potato's) place is quickly supplied by another potato in readiness for another pocket or cell as it shall present itself. When it becomes desirable or necessary to employ the
 105 lifting and lateral-pressure-relieving devices A and B, they are applied only on the side opposite to the vertical side of the hopper. Lest the potatoes, although immediately (or nearly so) above and along the path of travel of the conveyer, should fail to drop into the empty
 110 pocket or cell as it presents itself beneath, I have employed, primarily, the lifting and lateral-pressure-relieving device A, and auxiliary thereto the device B. In a nut-shell, these devices A and B are employed to release the potatoes, which are immediately (or
 115 nearly so) along and above the pathway of travel of the conveyer from lateral pressure and lateral cohesion, so that they may the more readily be impelled by their own gravity
 120 and the weight of superincumbent potatoes into the pockets or cells beneath. These devices A and B lift by a steady and even motion (that of the cam) the potatoes which laterally impinge upon the said potatoes and at the same time interpose a barrier against
 125 other potatoes sliding down the beveled side or sides of the hopper. Thus the potatoes which are immediately above and along the pathway of travel of the conveyer, being relieved from impinging lateral potatoes, do by their own gravity and the weight of superincumbent potatoes readily drop into the pockets or cells beneath. When the maximum of
 130 the lift has been made, there is a sudden drop

of the lifting and lateral-pressure devices A and B, and the falling potatoes which follow this drop strike a plane surface only, which cannot injure the potatoes or their eyes, the lifting and lateral-pressure device having already assumed its position in the same plane with the beveled side. This sudden drop of the lifting and lateral-pressure devices A and B may impart a slight tipping or sliding motion to the potatoes on the traveler sides toward a position above and along the path of travel of the conveyer, a sort of feed motion. It is manifest that if both longitudinal sides of the hopper are beveled more of the devices for lifting and relieving the lateral pressure from beveled sides are required than if one longitudinal side is vertical, as described.

The advantage of the spiral springs attached to the pressure-relieving devices A and B is this: They cause a sudden drop or recoil of the parts, which affects the potatoes adjacent to and above them like a jar and causes them or assists them to slide into the pathway of the conveyer. Besides, the devices without these springs are liable not to drop by gravity, and may thereby prevent access of the potatoes to the pathway of the conveyer. Therefore these springs insure the sudden drop of the devices A and B and overcome this liability.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a potato-planter, an endless conveyer provided with a series of pockets adapted to receive the potatoes singly, in combination with one or more lifting and lateral-pressure-relieving devices located at the lower side of the hopper or potato-reservoir and contiguous to the conveyer, substantially as described.

2. In a potato-planter provided with an endless conveyer arranged to receive potatoes, a hopper surmounting and communicating with the conveyer, having a vertical side arranged in the same vertical plane with one of the retaining sides of the conveyer, substantially as hereinbefore described.

3. In a potato-planter, an endless conveyer provided with a series of pockets adapted to receive the potatoes singly, in combination with one or more lower lifting and lateral-pressure-relieving devices A, and one or more pressure-relieving devices B, arranged at sub-

stantially right angles to the said lifting devices, substantially as described, and for the purpose set forth.

4. In a potato-planter, a conveyer, in combination with one or more lifting and lateral-pressure-relieving devices and a hopper provided with a vertical side arranged in the same plane with one of the vertical retaining sides of the conveyer, substantially as set forth.

5. In a potato-planter, an endless conveyer having vertical retaining sides, in combination with a brush or clearer and a hopper provided with a vertical side arranged in the same plane with one of the said sides of the conveyer, substantially as hereinbefore set forth.

6. In a potato-planter, an endless conveyer, in combination with one or more lifting and lateral-pressure-relieving devices, a revolving brush or clearer, and a hopper communicating with the conveyer, substantially as hereinbefore set forth.

7. In a potato-planter, the combination of an endless conveyer provided with a series of pockets or cells arranged to receive potatoes, sprocket-wheels carrying the conveyer, a revolving brush or clearer, a hopper provided with a vertical side, a discharge-tube, a scraper or coverer, a roller, one or more lifting and lateral-pressure-relieving devices arranged in the same plane with the conveyer sides, and mechanism for operating the said parts, substantially as shown.

8. In a potato-planter, the combination, with a hopper and a suitably-mounted endless conveyer arranged to receive potatoes intermittently therefrom, of vertical parallel retaining sides between which the conveyer travels, having a portion A of one of said sides movable in a vertical direction, a movable portion B of the hopper arranged in the same vertical plane with said conveyer side, and mechanism for intermittently actuating the said parts A and B, substantially as hereinbefore described, and for the purpose specified.

In testimony whereof I have affixed my signature in presence of two witnesses.

STEPHEN ESSEX.

Witnesses:

CHARLES HANNIGAN,
GEO. H. REMINGTON.