

(Model.)

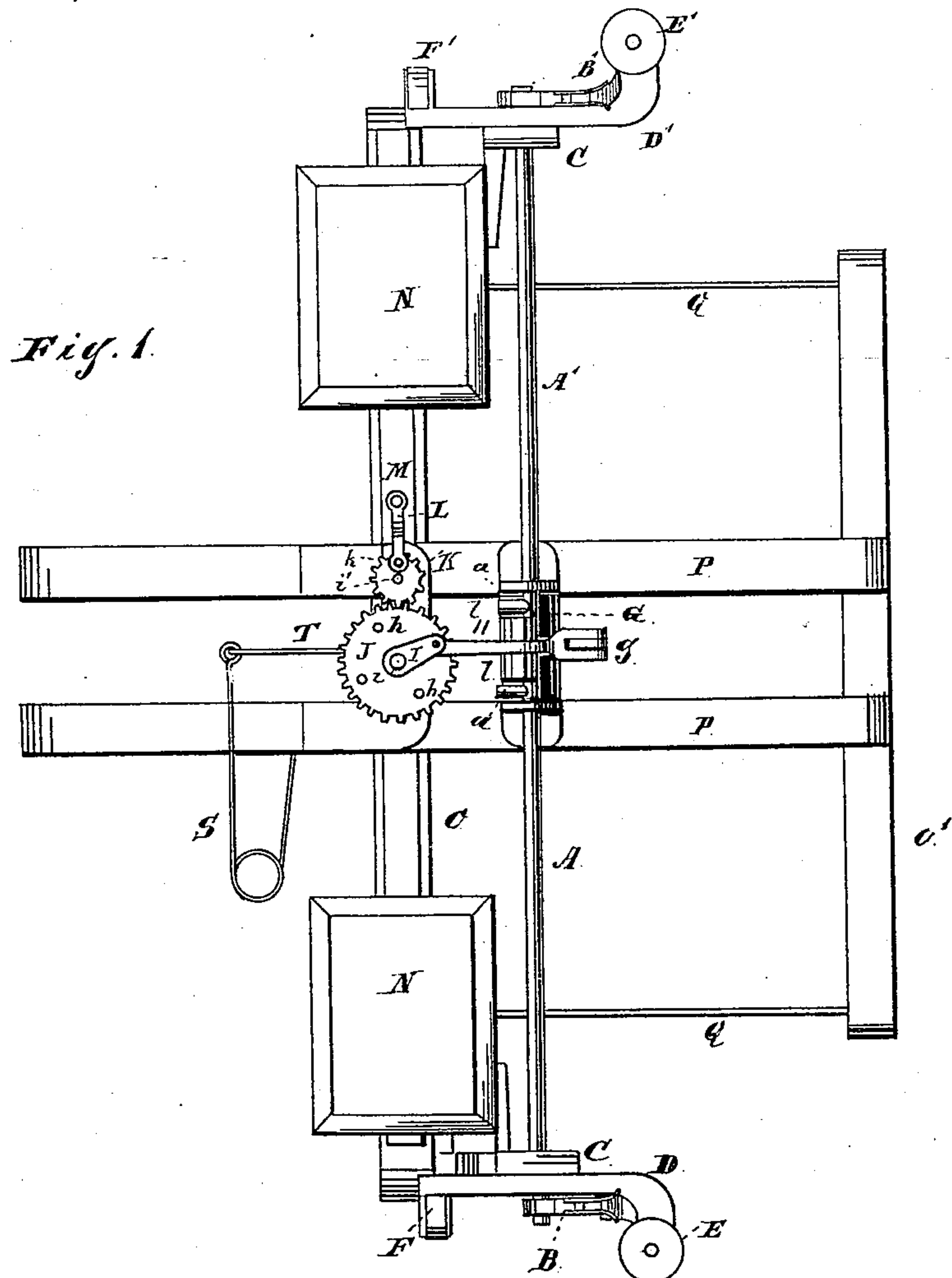
3 Sheets—Sheet 1..

B. PHELPS.

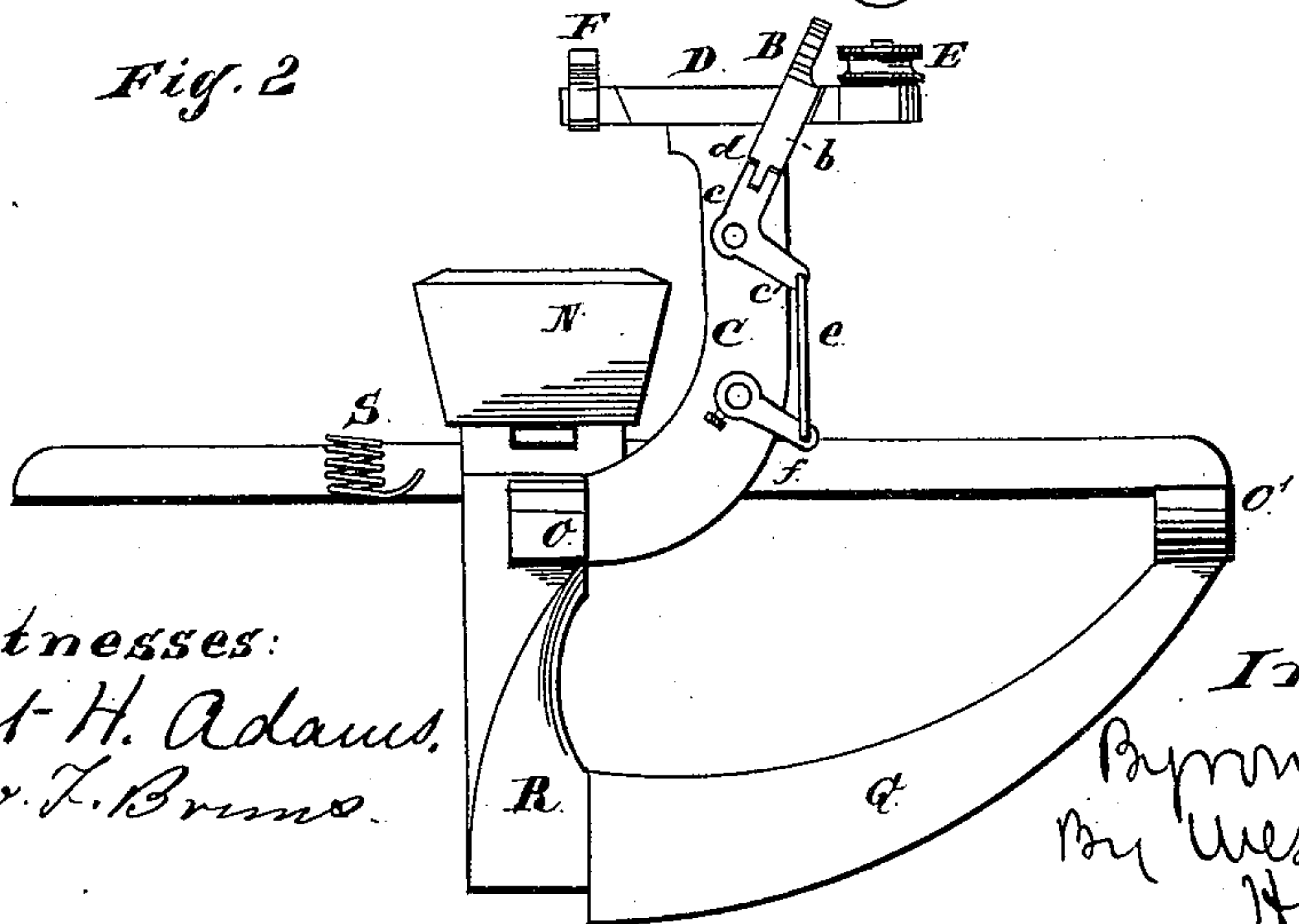
CHECK ROW CORN PLANTER.

No. 250,749.

Patented Dec. 13, 1881.



*Fig. 2*



*Witnesses:*  
Albert H. Adams.  
Henry F. Bruno.

*Inventor:*  
Byron Phelps  
By West Bond  
His attys

(Model.)

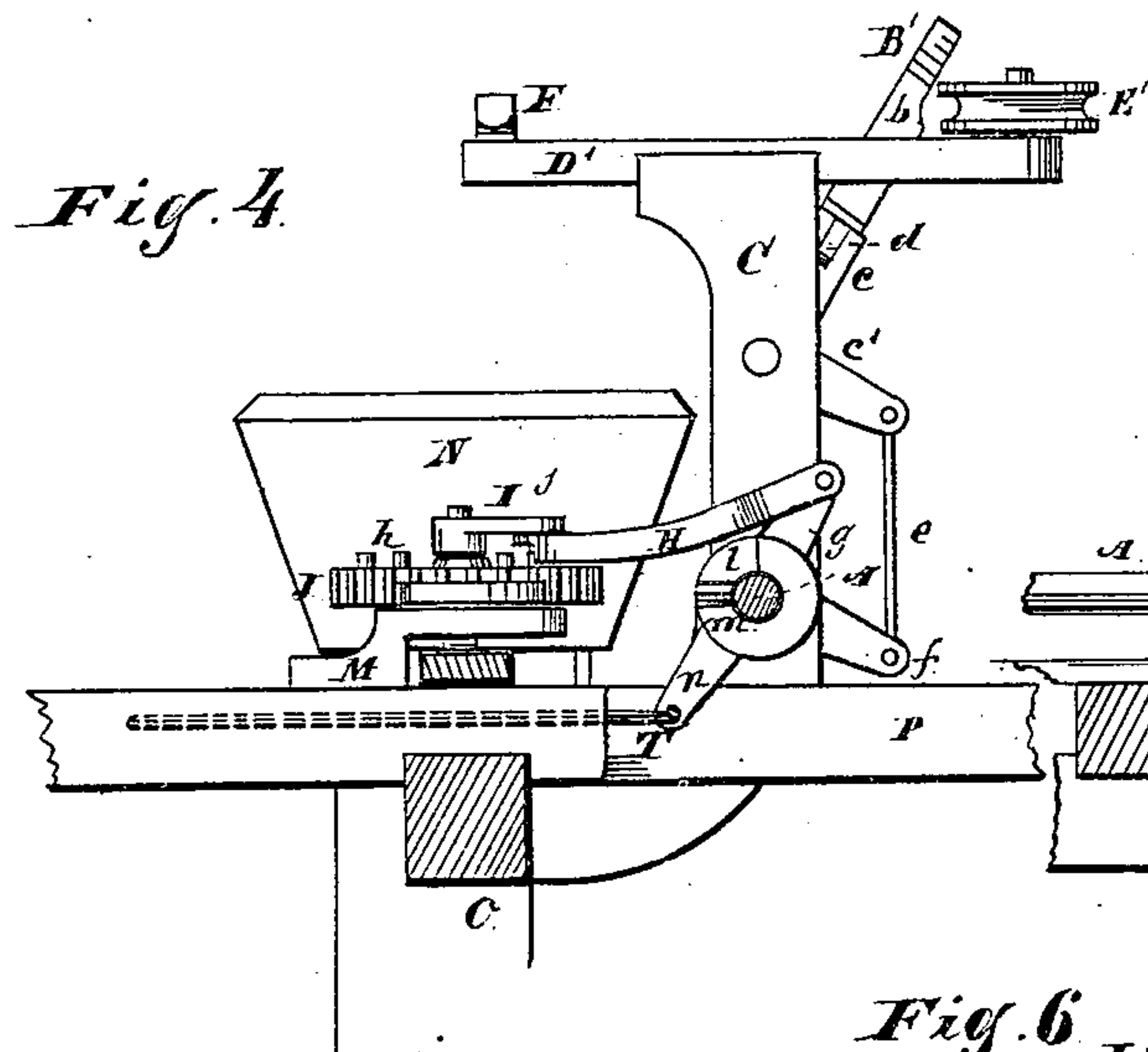
3 Sheets—Sheet 2.

B. PHELPS.

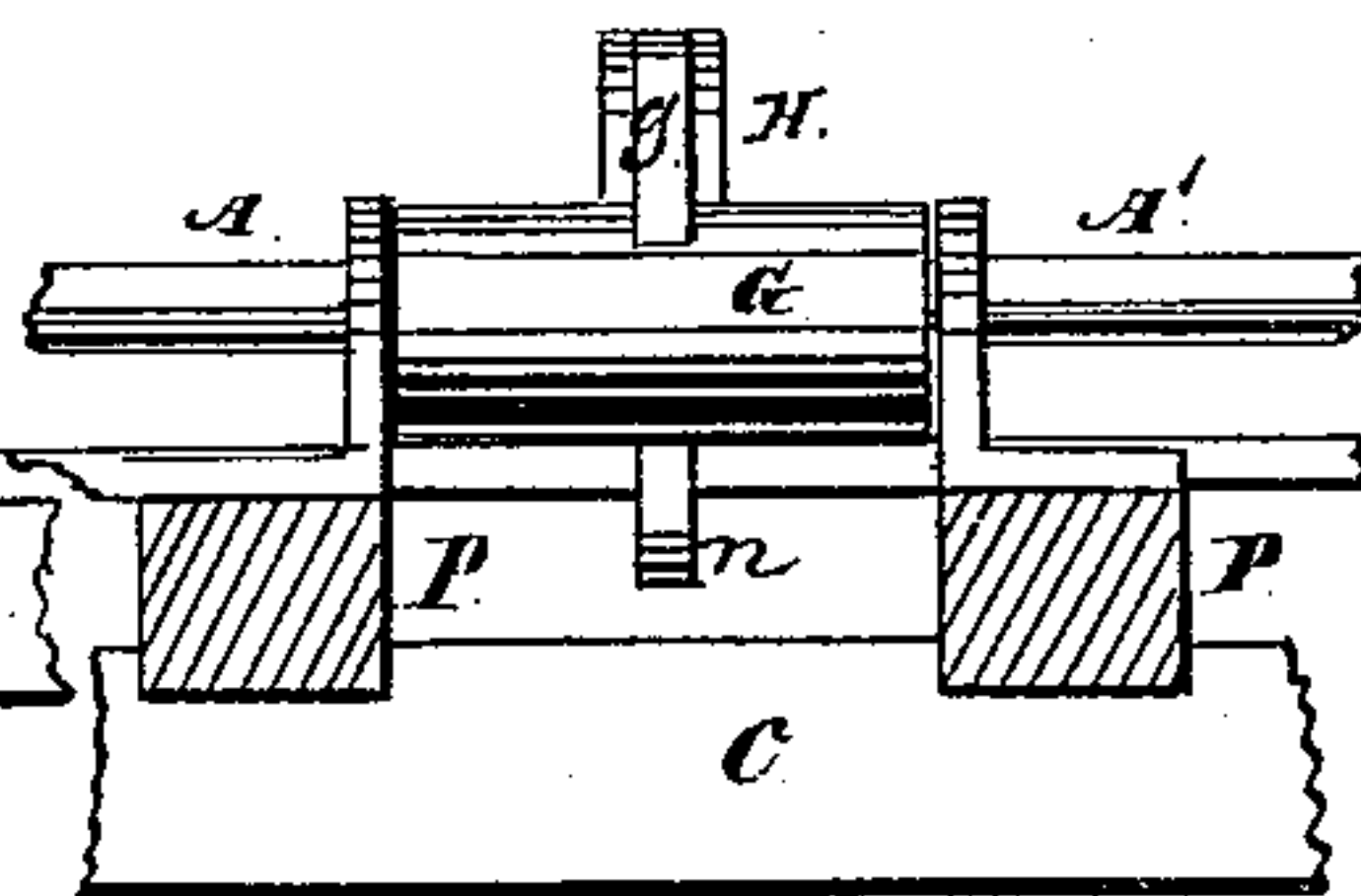
## CHECK ROW CORN PLANTER.

No. 250,749.

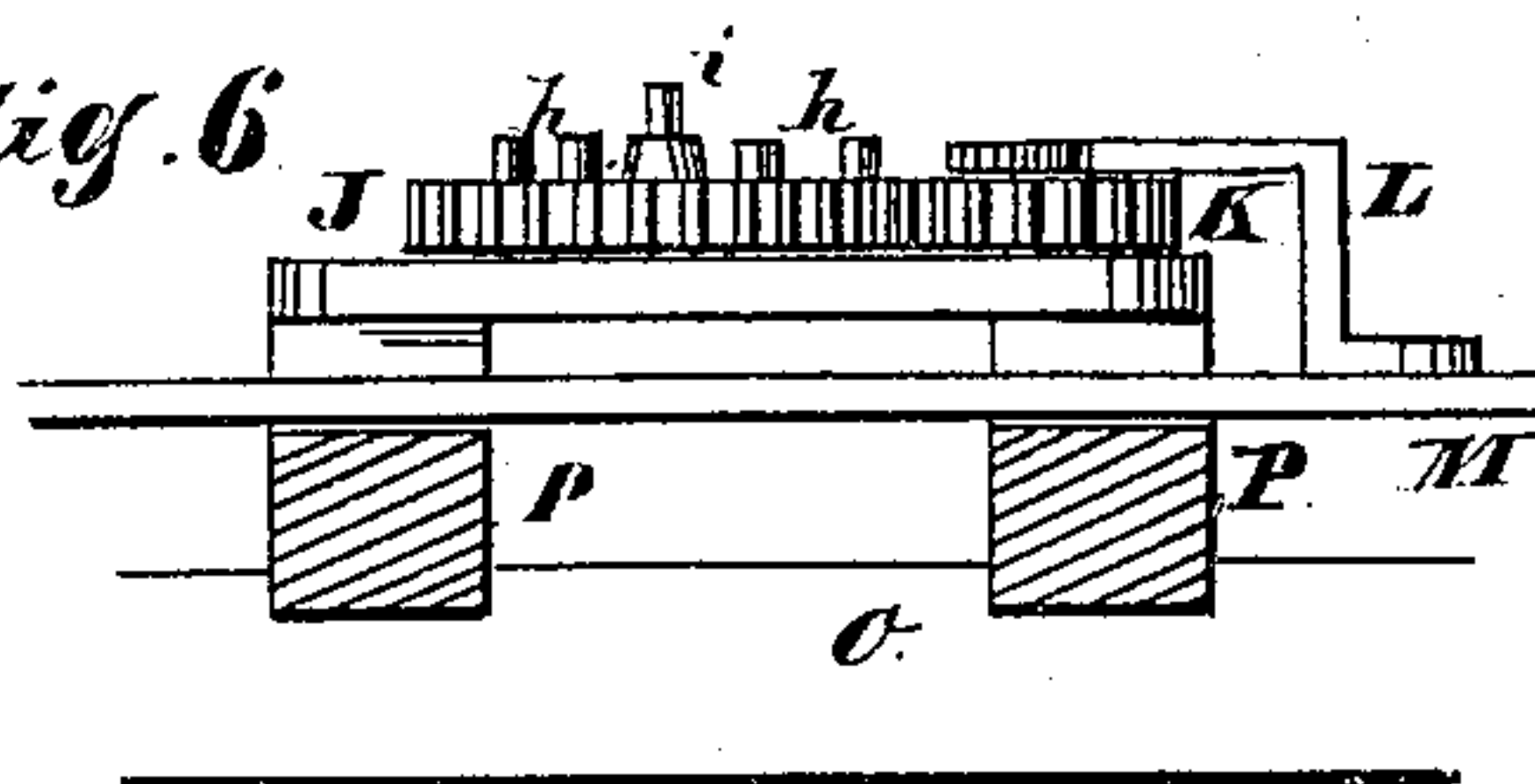
Patented Dec. 13, 1881.



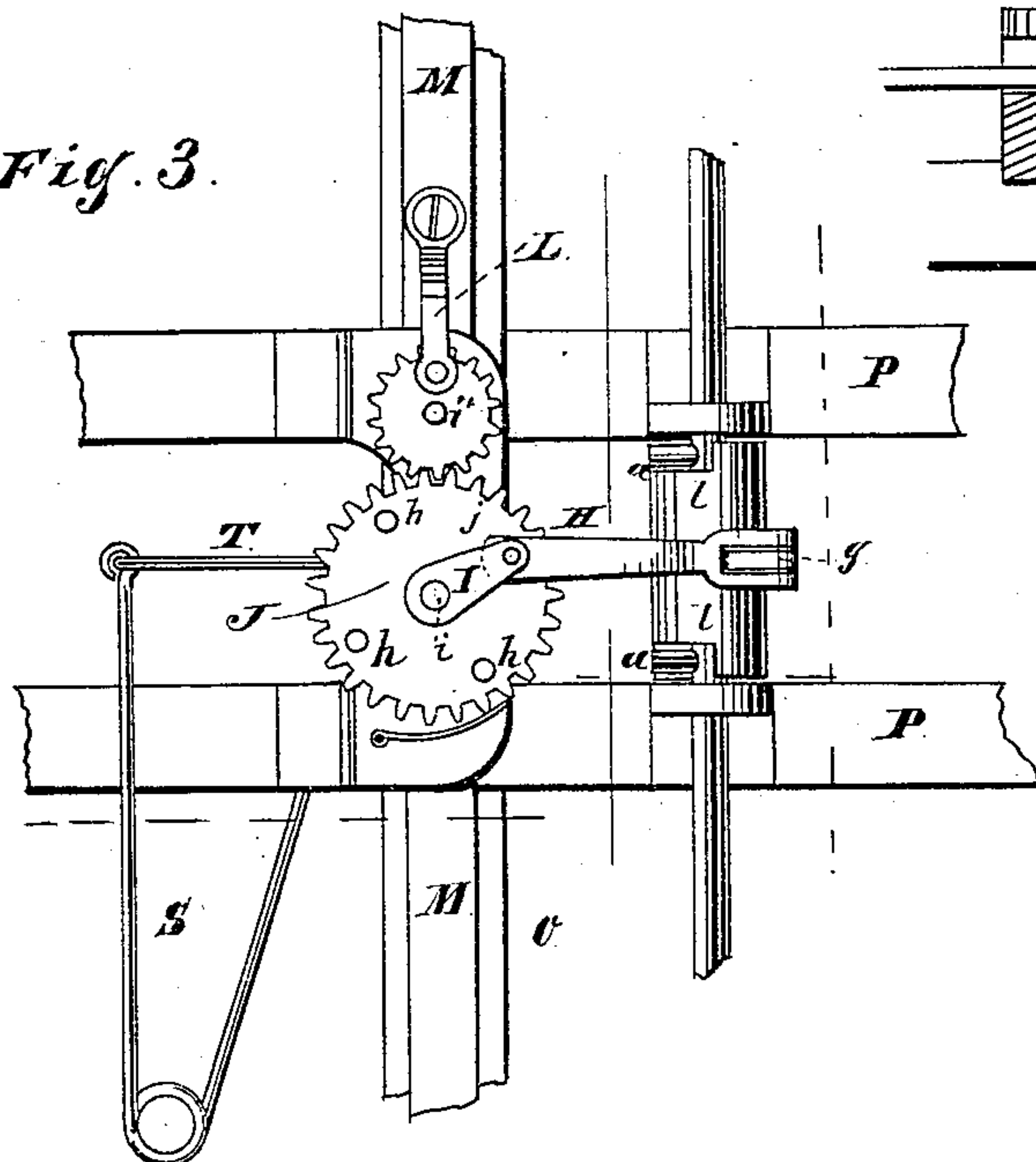
*Fig. 5<sup>e</sup>.*



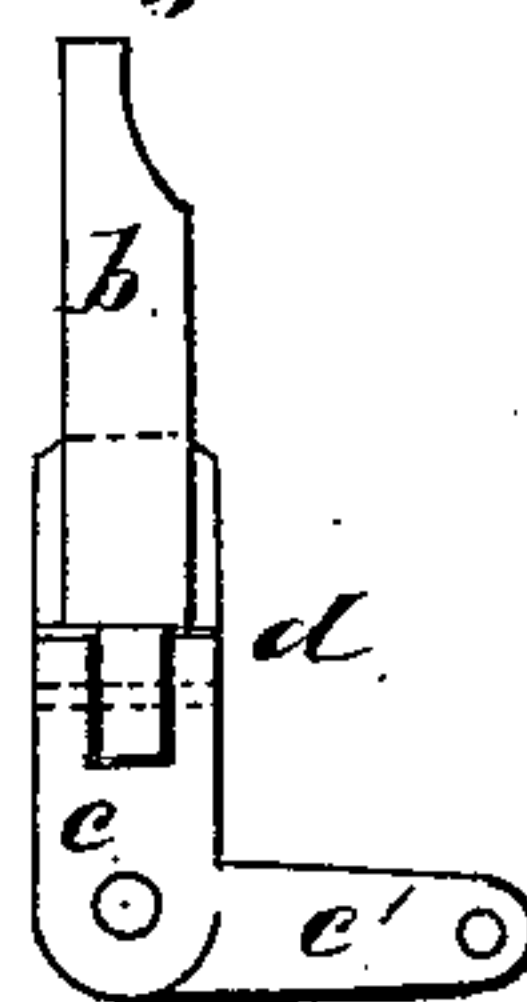
*Fig. 6*



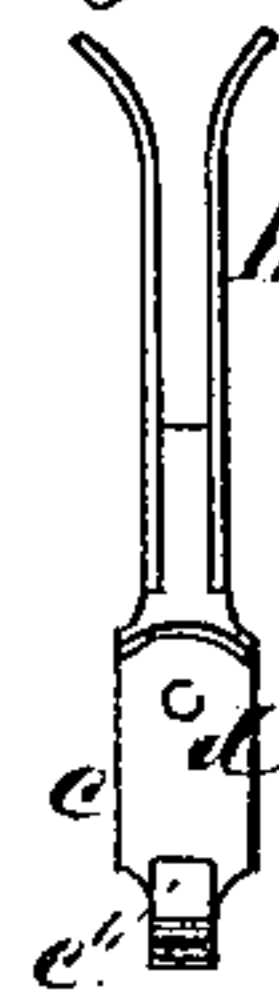
*Fig. 3.*



*Fig. 7.*



*Fig. 8*



*Witnesses:*  
*Albert H. Adams.*  
*Heinrich J. Bruns.*

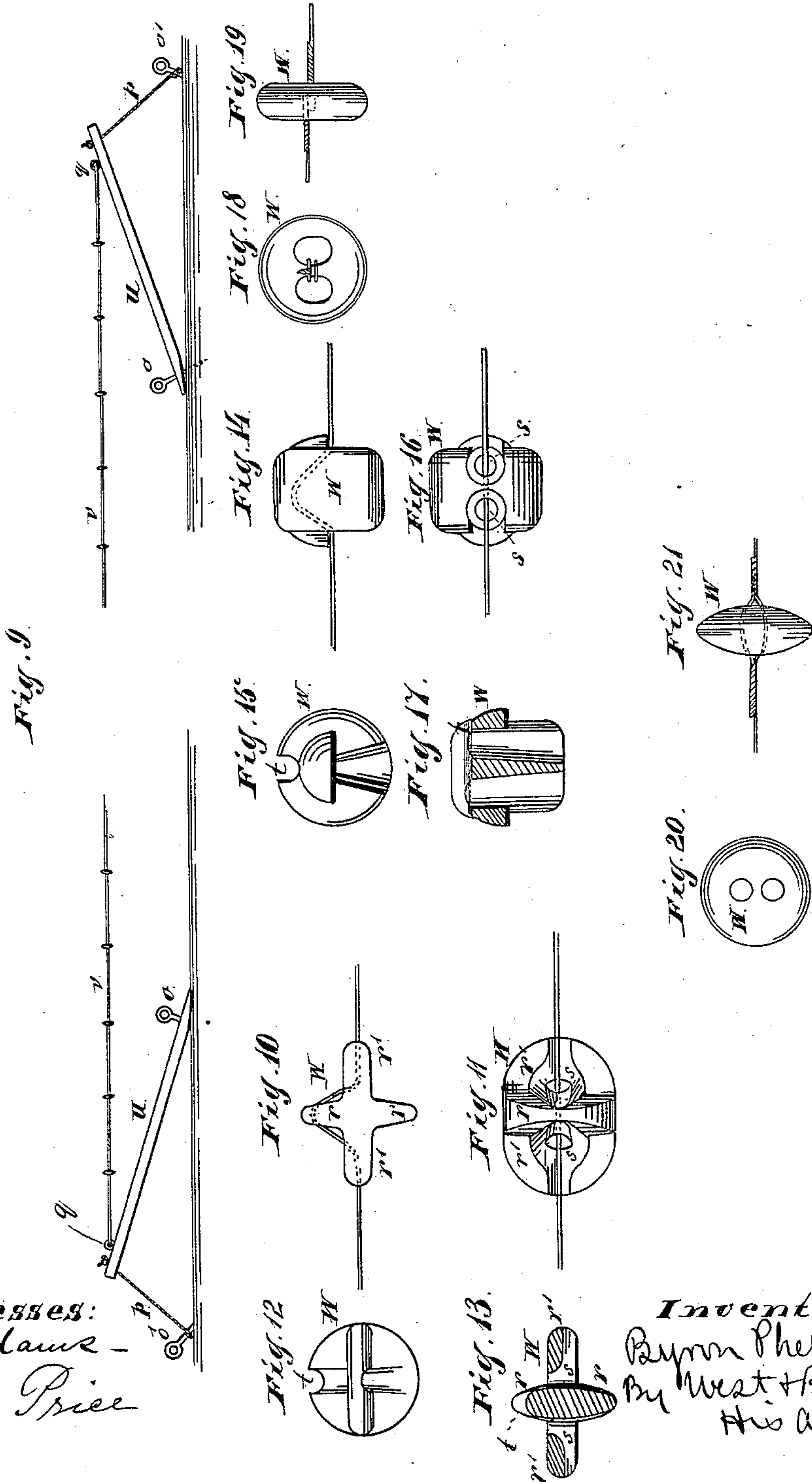
*Inventor:*  
Byron Phelps  
By West & Bond  
His attys

B. PHELPS.

CHECK ROW CORN PLANTER.

No. 250,749.

Patented Dec. 13, 1881.



Witnesses:  
A. H. Adams -  
B. A. Price

Inventor:  
Byron Phelps  
By West & Bond  
His Atty.



# UNITED STATES PATENT OFFICE.

BYRON PHELPS, OF MOLINE, ILLINOIS.

## CHECK-ROW CORN-PLANTER.

SPECIFICATION forming part of Letters Patent No. 250,749, dated December 13, 1881.

Application filed October 28, 1880. (Model.)

*To all whom it may concern:*

Be it known that I, BYRON PHELPS, residing at Moline, in the county of Rock Island and State of Illinois, and a citizen of the United States, have invented new and useful Improvements in Check-Row Corn-Planters, of which the following is a full description, reference being had to the accompanying drawings, in which—

Figure 1 is a top or plan view, showing the front or runner portion of a corn-planter; Fig. 2, a side elevation of the same; Fig. 3, an enlarged detail, being a top or plan view of the intermediate devices for operating the reciprocating seed-slide bar; Fig. 4, an enlarged detail, showing a seed-box, cord lever and support, and seed-slide operating devices in elevation, the seed-slide and driving-shaft in section, and the frame partly in section and partly broken away, with the runner removed; Fig. 5, an enlarged detail, showing a side elevation of the reciprocating head or center connection and its arms for advancing the gear which operates the seeding devices; Fig. 6, an enlarged detail, being a side elevation of the gear-wheels through which the seed-slide bar is reciprocated; Figs. 7 and 8, enlarged details of the cord or wire lever; Fig. 9, a side elevation, showing the wire or rope and the device for stretching and anchoring the same; Figs. 10, 11, 12, 13, details, showing one form of knot and the manner of attaching to the wire or rope; Figs. 14, 15, 16, 17, details, showing another form of knot and the manner of attaching to the wire or rope; Figs. 18, 19, side and edge views, respectively, of another form of knot; Figs. 20, 21, side and edge views of another form of knot.

This invention relates to the construction and operation of what are known or termed "check-row corn-planters," or corn-planters which are operated by means of a rope having knots thereon extending across the field; and its objects are, to increase the working qualities of the machine by making each side independent in its operations when engaged with the rope or wire, to insure a better and more perfect movement of the reciprocating seed-slide bar, to prevent side swing or movement of the rope or wire from affecting the movements of the wire or cord lever, and to simplify generally

the construction and operation of the several parts by which the seed-slide bar is given its reciprocating movement. These objects I accomplish by the construction and arrangement of mechanism which I will now proceed to describe in detail, afterward pointing out the improvements in the claims.

In the drawings, A A' represent section or parts of the divided shaft; B B', the cord-levers or arms; C C, the supporting standards or posts; D D', the cross-bars forming guides for the levers B; E E', the cord or wire pulleys; F F', the rear guides for the cord or wire; G, the center connection or head; H, the push-bar or arm for operating the gear-wheel; I, the guiding-strap; J, the large gear-wheel; K, the small gear-wheel; L, the crank-strap; M, the seed-slide bar; N, the seed-boxes; O O', longitudinal frame-pieces; P, the cross-pieces of the frame; Q, the runners; R, the seed-tubes at heel of the runner; S, the returning-spring; T, the connecting-link, with the head or block G; U, the support or bar forming the wire-stretcher; V, the check-cord; W, the check-knots; *a*, the pins at the inner ends of the shafts A A'; *b*, the engaging portion of the levers B; *c c'*, the lower portion of the levers B; *d*, the pivot of the section *c c'* of the lever B; *e*, the connecting-link; *f*, the crank on the outer end of the shafts A A'; *g*, the arm on the head or block G for the push-bar H; *h*, the pins on the gear-wheel J; *i*, the spindle or axis of the wheel J; *j*, the lip on the free end of the latch H; *k*, the crank-pin on the wheel K; *l*, the openings in the ends of the head or center piece; *m*, the engaging-face of the openings *l*; *n*, the arm through which the head or center piece is returned by the spring S; *o o'*, the staking-pins; *p*, the rope or cord for holding the bar or wire-stretcher U down; *q*, the eye for attaching the cord B; *r*, the center bar of the knots; *s s*, the openings; *t*, the recess in the bar or center piece, *r*.

Each section or half of the shaft extends from or near the center of the frame across its respective half of the front of the machine, and at their inner ends are supported in suitable bearings, one on each cross-piece P, and their outer ends are supported in suitable bearings in the standards C. The outer ends project beyond their bearings a suffi-



cient distance for the attachment of the cranks *f*, and their inner ends support the head *G* and form a divided spindle therefor, by which the head can be moved from either section independent of the other section, on which the head will turn.

The lever or cord arm *B* is made in two parts, connected by the joint *d*, which joint is transverse of the lower half of the arm, so that the upper half has a lateral swing or movement. The upper half, *b*, is provided with a suitable fork or opening to receive the check-rope and cause the knots to engage the levers in the usual manner, a lever being provided for each side of the machines. The lower section or part of these levers *B* has two arms, *c c'*, standing at right angles to each other, to the outer end of one arm of which is pivoted or hinged the upper part, *b*, the connection, as shown, being made by a transverse recess or slot cut or formed in the end of *c*, which receives a tongue on the end of *b*, so that when the two pieces *b c* are united by a pin or bolt, the part *b* is free to swing transversely, and yet have the connection rigid in the direction of the throw of the lever as a whole. Each of these levers as a whole is pivoted to the side of each standard *C* by a bolt or pin passing through a suitable opening located at the center of the arms *c c'*, the bolt or pin forming a pivot on which the arm or lever *B* can swing forward and back, as usual. The arm or portion *c'* of each lever *B* is connected by a link, *e*, with one of the cranks *f*, which cranks are firmly secured one to each outer end of the shaft-sections *A A'* at the proper point to bring them in line with their respective arms *c'*, so that each arm and crank will have corresponding movements and will be raised and lowered in unison, the advance of each lever *B* raising its arm *c'* and the crank *f* therewith connected, and giving the shaft-section to which the crank is attached a forward turn or movement to the extent of the throw of the lever, and the return movement of the shaft-section acting to give the crank and arm a reverse movement and return the lever to its normal condition.

The standards *C* are located one at each side of the machine, and are attached at their lower ends to the rear bar, *O*, or other portion of the frame in any suitable manner, and extend up a sufficient distance for their upper ends to receive cross-pieces *D D'*, one for each standard, which pieces form guides for the movement of the lever back and forth.

The pulleys *E E'* are mounted one on each forward end of each cross-piece in the usual manner, and to the rear end of each cross-piece is secured one of the guides *F F'*, the guides and pulleys being of the usual construction, and are for the purpose of keeping the cord or rope in its proper relation.

The center block or head, *G*, is located between the cross pieces or bars *P P*, and has a central longitudinal opening to receive the in-

ner ends of the sections *A A'*, by which it is supported, as before described. Each end of the block has a notch or recess extending from the periphery to the shaft-opening and forming an opening, *l*, to receive the studs or pins *a a*, a pin entering each opening, so that it will engage the face *m* of the opening and cause the spool to be moved with the shaft when advanced. This block or center piece, *G*, has an upwardly-projecting arm or post, *g*, to the outer end of which is pivoted one end of the latch or push bar *H*, which bar has its free end arranged to engage with the pins *h* on the wheel *J*. The push-bar *H* is of the proper length to extend from the post or arm *g* to the wheel *J*, and have its free end rest on the wheel just back of a pin, *h*, when the parts are in their normal condition or at rest. The free end of this bar, as shown, is formed with a projecting lip or flange, *j*, to rest on top of the pins, and the end of the bar beneath such lip has a face to properly engage the pins *h*; and in order to insure the withdrawal of the latch *H* without returning the wheel *J*, the side thereof which would come in contact with the next succeeding pin *h* on the return movement may be cut away so as to clear such pin. The free or engaging end of this latch *H* is kept in proper relation to engage the pins in succession by the strap *I*, one end of which is pivoted to the free end of the lever and the other to the spindle or axis of the wheel *J*, so that the arc of the circle in which the free end of *H* moves must always be the same, and such end must start from and stop at points in this arc of a circle in each movement which correspond to or coincide with the limits of the reciprocating movement of the latch *H*, so that the distance traversed by the wheel will be the same at each advance of the latch *H*. The strap *I* is of the proper length to bring the pivot for the free end of *H* in a vertical line coinciding with the arc of the circle in which the pins *h* move, and the form and arrangement of this strap and of the latch and their pivotal connections are such as to maintain the free end of the latch in the proper horizontal plane to engage the pins *h*, so as to advance the wheel *J*.

The wheel *J* is provided with a series of cogs on its periphery, and is mounted loosely on a vertical axis or spindle, *i*, around which it revolves in a horizontal plane. The upper face of this wheel carries the pins *h*, with which the free end of the latch *H* engage, which pins are located at regular intervals apart in an arc of a circle corresponding to that described by the end of *H*, and are so arranged that the distance between them corresponds to the distance traversed by the latch. As shown, the location of these pins and their arrangement relative to the latch and the distance the latch is advanced causes the latch to advance the wheel a quarter-revolution, giving the wheel an intermittent rotary movement to the extent of a quarter-revolution at each operation.



This wheel J engages a smaller wheel, K, having cogs on its periphery, the diameter of which is such as that its circumference will be twice the distance of the circumference of the wheel J between the pins *h*, so that advancing the wheel J a quarter-revolution, or the distance between each pin, will give a half-revolution to the wheel K. This wheel K is mounted loosely upon a vertical spindle or axis, *i'*, and rotates in a horizontal plane, and its upper face is provided with a crank-pin, *k*, to which is pivoted one end of a strap or bar, L, the other end of which is bent down and pivoted to the seed-slide bar, so that such bar will be given a reciprocating movement by the revolution of the wheel K.

The spindles *i* *i'* of the wheels J K are located upon a suitable base or support secured to the bars P, which support, between it and the face of the bars, is so formed as to leave a longitudinal opening for the passage of the seed-slide bar.

The seed-slide bar M may be of any suitable form of construction which, when reciprocated, will operate the seeding mechanism. The seed-boxes N, the frame-work consisting of the bars O O' P P', the runners Q, and seed-tubes R, may be of any of the usual forms of construction and arrangement for such parts. Only so much of a complete planter is shown as is necessary to illustrate the invention.

The spring or spring-bar S has two sides or arms, and is secured at one side to the cross-bar P, and its other side is left free, and to its end is connected one end of a link or rod, T, which link extends forward beneath the seed-slide bar, and is connected at its other end with a downwardly-projecting arm or post, *n*, located on the opposite side of the head or center G to the arm *g*; and the spring S is so arranged that it will act to throw the head G back when the limit of its advance movement is reached, which return movement, by reason of the contact between the shoulder *m* and the pin on the inner end of each section A A', returns the lever B to its normal position, to be again advanced by the action of the next cord-knot to rotate one section of the shaft and advance the wheel J through the latch H.

The cord or wire stretcher or support U is made from a single piece of material of sufficient length for the purpose of drawing the cord or wire taut and at the proper elevation for use. The end of this support which rests on the ground has an opening for the passage of a stake or pin, *o*, and its other end has one end of a cord, *p*, secured thereto, the other end of which cord can be secured to a stake or pin, *o'*, and to this end of the support is attached, in any suitable manner, one end of the check rope or wire. Two of these stretchers U may be used, one at each end of the rope or wire, and by placing them in a nearly vertical position with the check-rope attached and the ground end held by the stake *o*, their free ends can be drawn down until the check-rope is brought to

the proper elevation for use, which operation at the same time draws the rope or wire taut, or sufficiently so to insure the operation of the checkrowing devices; and when the rope is drawn to the required point the stretchers U can be held in position by means of the rope *p* and stake or pin *o'*. By this arrangement a firm support for the wire is provided, which serves also as a means by which the wire or cord can be quickly and easily strained and drawn to the proper position for use, and which will hold the wire in position and answer all the requirements of an ordinary anchor, allowing the wire to swing over when the planter approaches the end of the field, and at the same time it is very simple, cheap, and durable, and can be readily and easily adjusted to stretch the wire and allow the planter to pass to the end of the row.

Several varieties of knots are shown having a central cross piece or bar, with openings each side thereof for the passage of the cord and securing the knot in position thereon. In the form shown in Figs. 10, 11, 12, and 13 the knot has four wings or flanges, two of which, *r*, form the working portion, or the portion which engages the lever, and the other two, *r'*, the guides for keeping the knot in position on the wire or cord. In this form of construction the guide-wings *r'* have transverse openings *s* located on each side of the base of the working-wings *r*, and one side or wing, *r*, has a notch or opening, *t*, to receive the wire or rope. This knot is attached by passing the rope or wire through one of the openings *s*, thence up over the wing *r*, having the notch *t*, then down through the other opening *s*, the rope lying in suitable longitudinal grooves formed in the wings *r'* and merging into the openings *s*, which grooves extend to the edge of the guide wings or flanges and fit over the wire or cord and prevent side movement of the knot, while end movement is prevented by the pressure of the rope against the sides of the notched wing *r*, so that the knot is held firmly in position.

Fig. 10 shows the knot in elevation with all the wings turned or standing edgewise. Fig. 11 shows it in elevation with an edge view of the engaging-wings and a face view of the supporting-wings and the knot or cord grooves; Fig. 12, an end elevation, showing a face view of the engaging-wings and an edge view of the guide-wings; Fig. 13, a vertical longitudinal section of the knot in the position shown in Fig. 10. Fig. 12 shows the position of the knot when in use. In the form shown in Figs. 14, 15, 16, and 17 the knot is of a tubular or circular shape, and the body of the knot is provided with transverse openings, which correspond, essentially, to the openings *s*, which openings are separated by a central portion or bar, one edge of which center bar and the face of the knot has a groove or notch corresponding to the notch *t*, to receive the rope, and the face of knot opposite the grooved side has at



each end recesses extending from the exterior to or near the center and opening into the holes *s*, to serve as guides for the rope. This construction differs from the one just described in having the body of the knot entire, or nearly so, instead of having some portions removed so as to form wings, and it is secured to and held in position on the check rope or wire in the same manner as the knot first described.

10 Figs. 18 and 19 show, respectively, a face and edge view of a disk form of knot having two openings, separated by a center or bar, the end of the rope or wire sections passing over and around the center or bar through the openings, and being wound around the main wire or rope section to fasten the knot in position; and Figs. 20 and 21 show, respectively, a face and edge view of a disk form of knot having two openings separated by a center or bar, the rope or wire passing through one of the openings, and a short piece having its ends wound around the main wire each side of the knot passing through the other opening to fasten the knot in a firm and secure manner.

25 All of these several forms of construction shown have central openings separated by a partition or bar, and the rope or cord is passed through the openings in such manner as to bear against the center piece or bar and retain the knot in proper position and prevent it getting out of place. This mode of attachment is very simple and cheap, and requires no special skill to secure the knots to the wire so as not to yield in use and have them operate in an efficient and proper manner.

35 In operation, when the machine is traveling across the field in the direction for the rope to engage the lever *B*, that lever with the section *A* of the shaft alone will be operated; and when the machine is traveling in the direction to have the rope engage the lever *B'*, that lever with the section *A'* of the shaft alone will be operated, for the reason that the two shafts are disjointed at their center, so as to operate independent one of the other and yet do their work effectually. As the lever *B* is advanced by the engagement of the cord-knot therewith the *L* portion thereof *c'* will be raised and the link *e* and crank *f* will be correspondingly raised, which movement will revolve the shaft-section, and the inner end of the shaft, through its pin, will rock the center or head *G* by reason of the engagement of the pin with the shoulder *m*. This movement of the center or head raises or advances the arm *g*, causing the latch *H* to be advanced, and such movement of the latch will, through the engagement of its inner end with one of the pins *h*, advance the wheel *J*, which wheel in turn rotates the wheel *K* and gives a reciprocating movement to the seed-slide bar; and these movements will continue until the end of the field in that direction is reached. When the machine returns and the rope or wire engages the lever *B'*, that lever will operate its shaft-section, and through it

the center or head *G*, latch *H*, and wheel *J*. The center or head is returned after each advance by the action of the spring or spring-arm *S*, bringing the parts into position for the next cord-knot to act on the lever and operate the several parts.

By dividing the shaft into two sections, each acting independent of the other from their respective levers or arms, one side with its devices will be inoperative, while the other is in use, decreasing the amount of friction to that extent and enabling the work to be performed from one side of the planter at a time without disturbing the other side.

I do not broadly claim operating the seed-slide by means of a divided shaft provided at the outer ends with check-cord levers, when the adjacent ends of the shaft-sections are supported in a loose sleeve having a miter-wheel gearing with a similar wheel on a cam-shaft, the cams on which operate a depending bar connected with the seed-slide, so that when either part of said divided shaft is rotated the sleeve is operated and the seed-slide moved.

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

1. In a check-row corn-planter, a check-cord lever, *B*, composed of sections, and having its upper section pivoted to swing transversely, for maintaining the proper relation between the lever and the check-cord, substantially as and for the purposes specified.

2. In a check-row corn-planter, the combination, with the shaft composed of two sections, having near their adjoining ends the lateral pins *a a*, of the reciprocating head or block *G*, sustained by and encircling the inner ends of the shaft-sections, and provided with openings *l l*, for receiving the lateral pins, said head or block being connected with mechanism for moving the seed-slide, and with means for retracting it after being advanced by one or both sections of the shaft, substantially as described.

3. In a check-row corn-planter, the combination, with a shaft composed of two sections, having at their outer ends the cranks *f*, and near their inner ends the lateral pins *a*, of the head or block *G*, sustained by and encircling the adjoining ends of the shaft-sections, and having the openings *l l*, to receive the lateral pins *a*, and the check-cord levers connected with the cranks *f*, as described, the said head or block having an arm, *g*, connected with mechanism which operates the seed-slide, and with an arm, *n*, connected with means to retract the head or block after it has been advanced by one or both sections of the shaft, substantially as set forth.

4. In a check-row corn-planter, a reciprocating head or block operated from either end of a divided shaft and connected with a latch or push bar, *H*, in combination with the strap *I* and the wheel *J*, having the upward-projecting pins *h*, said strap being connected with the latch or push bar, and all arranged substan-



tially as described, whereby the wheel is advanced at regular intervals and uniform distances, as set forth.

5 In a check-row corn-planter, the combination of the reciprocating head or block G, connected with the latch or push bar H, with the strap I, the wheel J, having the upward-projecting pins *h*, and the wheel K, eccentrically connected with the seed-slide bar, substantially as described.

10 6. In a check-row corn-planter, the divided sections A A' of the shaft, the check-cord levers or arms B B', links *e*, cranks *f*, head or block G, and spring S, in combination with  
15 the latch or push bar H, wheel J, having pins

*h*, wheel K, having the crank-pin *k*, strap L, and seed-slide bar M, all constructed and operating substantially as and for the purposes specified.

7. The check-cord knot or ball herein de- 20 scribed, constructed with a central cross-piece or partition, having on its opposite sides the openings for the passage of the check-cord, said cross-piece or partition forming a bridge for the cord, substantially as and for the purpose 25 described.

BYRON PHELPS.

Witnesses:

THOMAS WILSON,

THERON W. WHITMAN.