

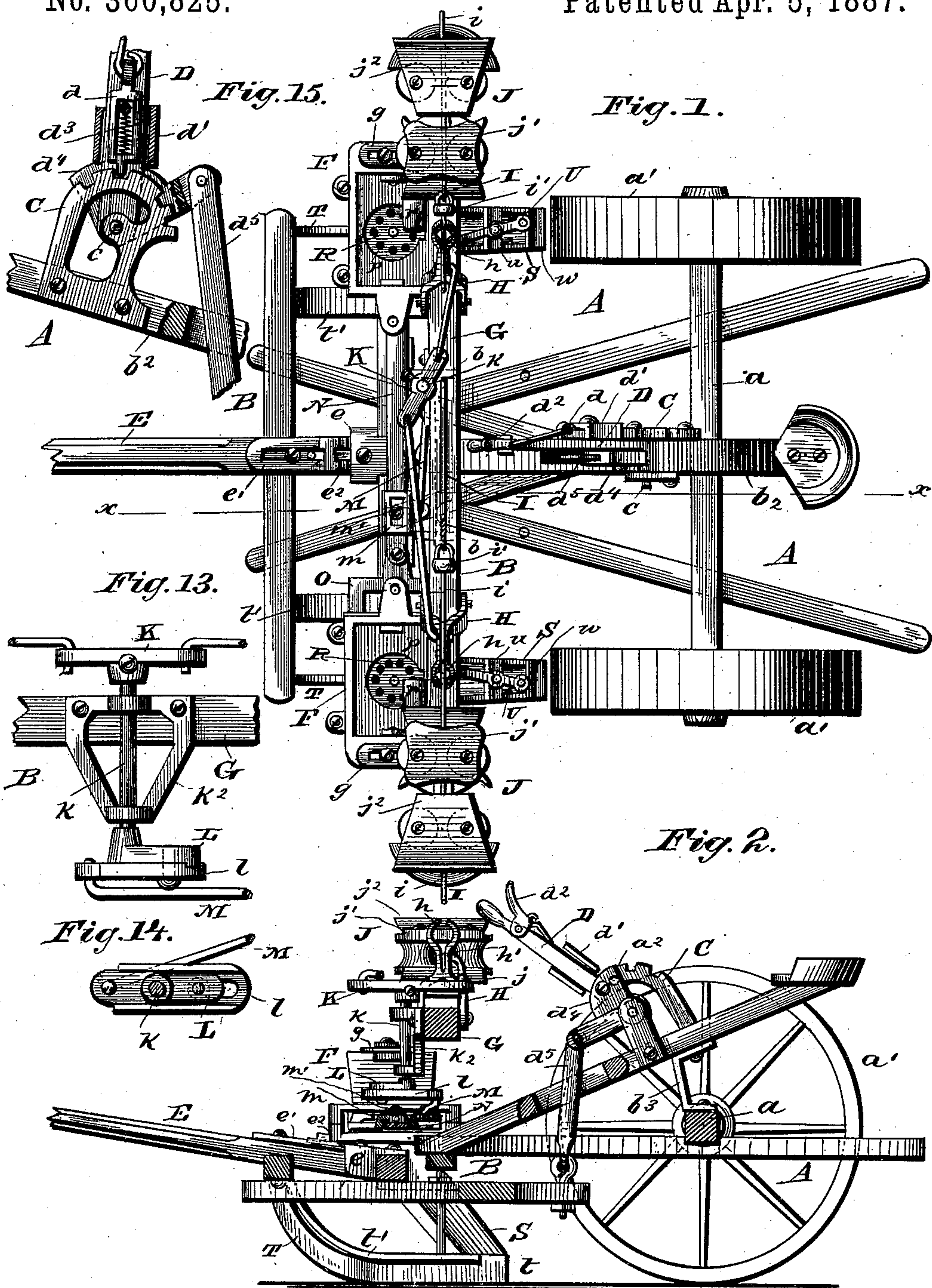
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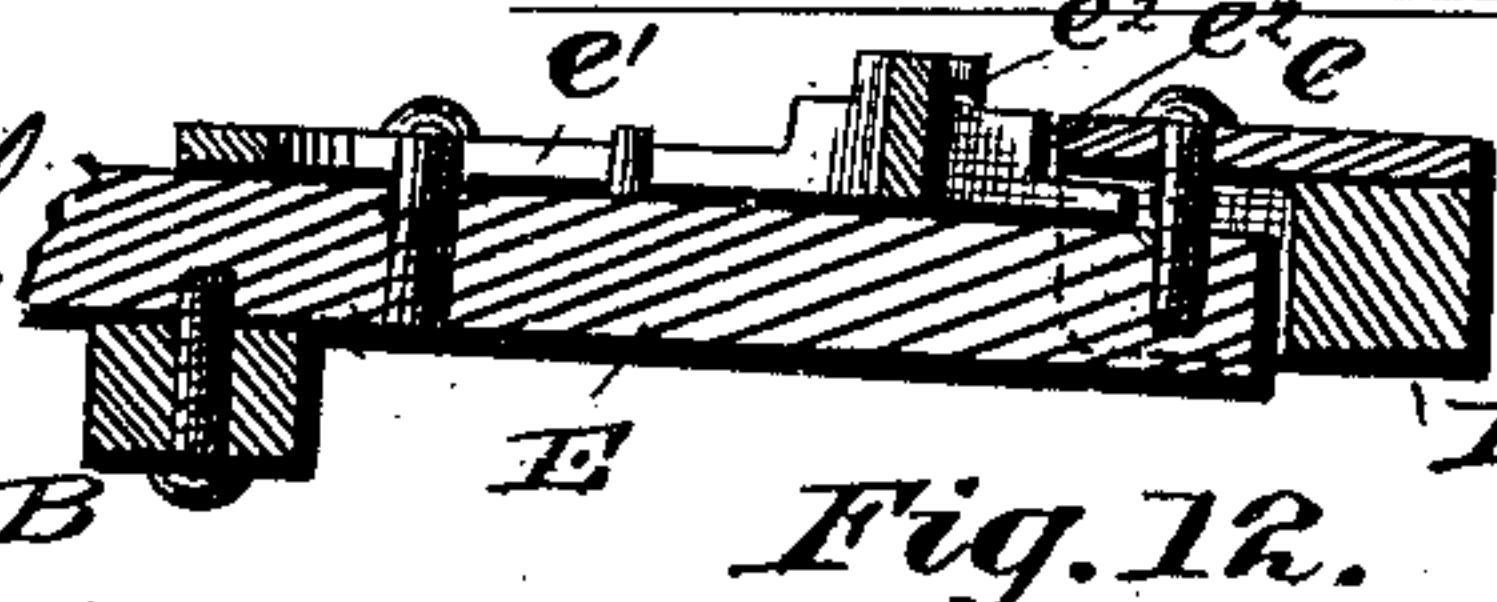
J. D. SMITH.  
CORN PLANTER CHECK ROWER.

No. 360,825.

Patented Apr. 5, 1887.



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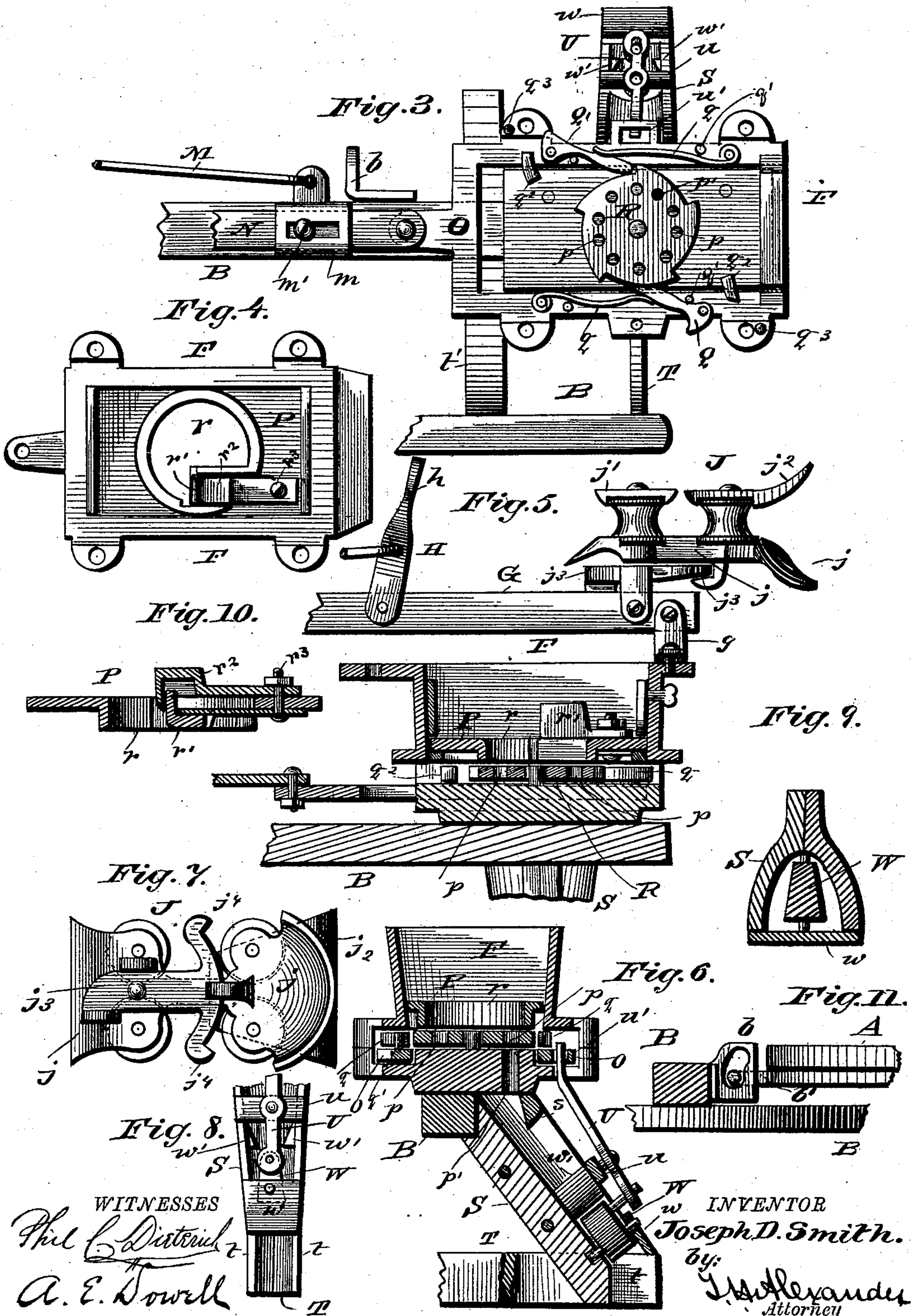
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# UNITED STATES PATENT OFFICE.

JOSEPH D. SMITH, OF ROCKFORD, ILLINOIS, ASSIGNOR TO THE SKANDIA  
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## CORN-PLANTER CHECK-ROWER.

SPECIFICATION forming part of Letters Patent No. 360,825, dated April 5, 1887.

Application filed December 15, 1886. Serial No. 221,653. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH D. SMITH, of the city of Rockford, in the county of Winnebago and State of Illinois, have invented certain new and useful Improvements in Corn-Planters, Check-Rowers, and Check-Rower Wires; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification, in which—

Figure 1 represents a top or plan view of my improved check-rower and corn-planter combined. Fig. 2 is a vertical longitudinal section of the same on line *x x*, Fig. 1. Fig. 3 is an enlarged plan view of the seed-box bottom, the casing being removed. Fig. 4 is a bottom plan view of the casing of the seed-box. Fig. 5 is an enlarged vertical longitudinal section taken centrally through the seed-box. Fig. 6 is a transverse vertical section of the same. Fig. 7 is a bottom plan view of one of the system of pulleys. Fig. 8 is a rear view of a portion of the seed-delivery spout. Fig. 9 is a horizontal section of the same. Fig. 10 is a vertical section showing the construction of the seed-cut-off block. Fig. 11 is a detail view showing the connections of the frames A and B. Fig. 12 is a detail sectional view showing the construction of the tongue-adjusting devices. Fig. 13 is a detail view showing the construction of the double-armed lever. Fig. 14 is a sectional plan view showing the adjusting foot-block L. Fig. 15 is a detail view, partly in section, showing the construction of the lever D and its rack-bar.

This invention relates to improvements in combined corn-planters and check-rowers; and it consists in the novel construction and arrangement of the various parts of the mechanism, hereinafter described, illustrated in the drawings, and pointed out in the claims hereto annexed.

Referring to the accompanying drawings, A designates the main frame, having the axle *a* and wheels *a' a'*, as shown.

B is the frame carrying the seed-boxes, having brackets *b b* attached to its rear rail, provided with curved slots, in which rest the rounded ends of a transverse bar, *b'*, attached

to the front end of the main frame. A longitudinal bar, *b<sup>2</sup>*, runs from the bar *b'*, and is supported upon a standard, *b<sup>3</sup>*, rising from the axle which forms the rear rail of the main frame. This bar supports at its end the driver's seat, and has attached to one side, in a suitable position, the curved rack-plate C.

*c* is a shaft journaled in the rack-plate concentric with the rack and in a standard rising from the opposite side of the bar *b<sup>2</sup>*.

D is the lever-handle, having the slotted pawl *d* on one side, which pawl moves in the director *d'*, attached to the side of the handle, and is moved upward by a wire or connecting-rod, joining its top with the angle of the lever *d<sup>2</sup>*, pivoted upon lever-handle D, and downward by the coil-spring *d<sup>3</sup>*, resting in its slot, and bearing at its upper end upon the screw or bolt securing the director to the lever-handle. The lower end of said handle is curved so as to rest upon the shaft *c*, and is secured by means of a bolt or screw passing through either of the openings *a<sup>2</sup>*, for lateral adjustment, in a vertical plate, *d<sup>4</sup>*, or arm rising from the shaft *c*.

*d<sup>5</sup>* is a connecting rod or link pivoted at its upper end between lateral forward extensions from the plate *d<sup>4</sup>*, and at its lower end loosely connected to a staple or hook secured to the rear point of the seed-box frame, which has a triangular rearward projection. By means of the rack, lever-handle, pawl, and connecting-rods the two frames may be turned at various angles on each other in the well-known manner.

E is the tongue loosely connected to the front bar of the front or seed-box frame, so as to move in a vertical plane thereon, and with its rear end resting in a rectangular bottomless metallic casing, *e*, secured to the rear rail of the main frame.

*e'* is a longitudinally-slotted adjusting-plate having near its rear end the shoulders *e<sup>2</sup> e<sup>2</sup>*, of heights increasing from the end of the plate toward its slot, the said rear end being notched between the shoulders. By moving the adjusting-plate inward shoulders of different heights may be moved into the casing, and the tongue made to assume different inclinations on the seed-box frame. The tongue is then held in position by set-screws passing into it,



respectively, through the casing and through the slot of the adjusting-plate.

F F are the seed-boxes respectively secured to the opposite ends of the rear rail of their frame. The said boxes being similar, the description of one only is necessary. Each seed-box is composed of a base-plate secured, as described, to the frame, and a four-sided body secured to the base-plate by bolts which pass through lugs on the side edges of the bottom of the body and on the similar edges of the base. These lugs extend, respectively, upward and downward, so that a proper amount of space is left between the body and base-plate, as shown.

The mechanism for delivering the seed from the box is as follows:

G is a bar having its ends secured to the seed-boxes by the angle-brackets *g*, the vertical legs of which are bolted to the bar G, and the horizontal legs are provided with longitudinal slots, through which bolts pass into proper openings in their flanges on the outer ends of the boxes. By these means the bar can be adjusted inwardly or outwardly upon the boxes. At proper points equally distant from the ends of the bar G are pivoted the bifurcated lower ends of yokes H, which have circular openings *h* in their upper ends and longitudinal notches *h'* running downward from said openings. The upper ends of the openings are preferably cut through, so that the sides of the openings constitute spring-bars.

I is a wire composed of equal links, *i*, of suitable length, united by swivel-joints. These joints are each composed of the hemispherical button *i'*, provided with a bail to which the end of a link is attached by a twisted loop, while the end of the adjacent link passes through an opening in the base of the button and is bent up, so as to be retained within the interior hollow of the same.

J is a system of four similar pulleys arranged in an inner and outer pair, there being such a system attached to each end of the bar G. These pulleys turn on vertical shafts, which rise from a plate, *j*, and each pair has, respectively, secured above it by bolts to the ends of the shafts of the pulleys a guide-plate, *j'* *j''*, and the guide-plates *j*, *j'*, and *j''* each have recesses to receive the edges of the pulleys, and have their outer edges either beveled or inclined, so as to diverge from each other.

When the machine is in use, the wire is drawn against one of each of the inner and outer pairs of pulleys on each side, bearing against those in front on the side on which the wire is running into the machine, and on those in rear on the opposite side. The inner pairs of pulleys are so situated as to cause the wire to run straight through the yokes.

The guide-plate *j* is pivoted centrally between the inner pair of pulleys to a bracket, *j'*, and has on its under surface a notched lug. The legs of bracket *j'* run downward and are bolted to the sides of the bar G, and it has a

horizontal projection provided with an edge concentric with the pivotal point of the guide-plate *j*, which edge enters into the notch in the lug on said plate and supports the system of pulleys. The said edge has its ends provided with the stop-projections *j'* *j''*, against which the notched lug strikes and prevents the system of pulleys from turning too far forward or backward.

The wire I passes between the pulleys of each pair in each system, the said pulleys being far enough apart to pass the buttons *i'*.

As the wire passes onward, one of the buttons approaching the adjacent yoke, which is then inclined outward, strikes the same over notch *h'*, moving the yoke inward, and then slipping through the opening *h*. The yokes are moved inward and outward together by means hereinafter described. When the button reaches the other yoke, it strikes the same over its notch *h'*, turning it outward and passing through its opening *h*. Thus both yokes are acted on in succession by each button, and at each action a planting is obtained by mechanism hereinafter described.

Each yoke is attached by a pivoted connecting-rod to the end of one arm of the double-armed lever K, secured upon the top of the shaft *k*, turning in bearings in a depending bracket, *k'*, secured at its upper part to the bar G. The lower end of said shaft has secured upon it a horizontal foot-block, L, which rests in a hollow recess in the upper surface of a longitudinally-slotted block, *l*. By means of this slot and a set-screw passing there-through and into the foot-block, the recessed block can be adjusted in and out upon the same.

The inner end of the slotted block is connected by a pivoted rod, M, to a lug on a longitudinally-slotted plate, *m*, rendered longitudinally adjustable by means of its slot and the set-screw *m'* upon the connecting-bar N. The said bar is reciprocated by means of the rod M when the shaft *k* is oscillated by the action of the rods K and the yokes, and it consequently reciprocates the rectangular actuating-frames O O, each of which lies between the body and base plate of one of the seed-boxes.

R is a ratchet seed-wheel pivoted centrally upon the bottom of each seed-box, and provided with the circle of equidistant openings *p*, each of which may be brought to register with an opening, *q'*, through the base-plate of the seed-box. Upon each side rail, respectively, of the corresponding frame O are pivoted the pawls Q Q', the ends of which, however, point in opposite directions, so as to properly meet the ratchet-teeth. Each pawl is driven inward by a spring, *q*, and has its inward motion limited by a stop-pin, *q'*, as shown.

*q''* *q'''* are stops fixed to the side rails of frames O, with their ends curved so as to impinge against the teeth of the ratchet-wheel R, near their points, and serve to keep the same in proper position for delivering the seed when it is actuated by the pawl Q.



$q^3$   $q^3$  are stop-pins on the sides of the seed-box frame F, which pins are adapted to be struck by a projection formed on the base of each pawl when the latter is near the end of its stroke, and drives its point inward, thus making the action of the pawls positive and supplementing the springs.

P is a guard-plate with its edge resting on clips secured to the inner surface of the ends of the seed-box, so as to overlie the ratchet-wheel, and  $r$  is a circular opening through said plate to admit grain to the openings  $p$  in the ratchet-wheel.

$r'$  is a spring scraping-block or cut-off pivoted to the underside of the guard-plate, and having its inner end, with reference to said plate, rounded to allow the ratchet-wheel to readily rotate under it. The said block rests in a boxing,  $r^2$ , secured by a bolt,  $r^3$ , as shown in Figs. 4 and 10, to the guard-plate, and the opening  $r$  is flanged around its inner edge to make it fit close upon the ratchet-wheel. As the actuating-frames O reciprocate, the pawls Q Q' alternately rotate the ratchet seed-wheel the proper distance to bring one of the openings  $p$  over the discharge or exit opening  $p'$ , and discharge the grain that the former has received from the seed-box through the latter into the semi-cylindrical spout S, inclined downward and rearward from the base-plate of the said box and provided with the inclined partial diaphragm  $s$ , near its top, to prevent the grain from slipping therefrom. The lower end of the spout is connected to and discharges between the divergent arms  $t$   $t$  of the corresponding furrow-opener T', which curves upward and forward therefrom, and has its front end secured to the front rail of the seed-box frame.

$t'$   $t'$  are curved plates secured to said frame to prevent the furrow-openers from penetrating too deeply.

U is a lever pivoted upon a bar,  $u$ , secured across the rear side of the spout S, and with the end of its upper arm so bent as to enter the slot of a projection,  $u'$ , which stands from the inner edge of the frame O. Consequently the reciprocation of said frame vibrates the lever, and also the triangular block W, pivoted within the lower end of the spout S, which is covered by a plate,  $w$ , over said block. When the point of the block is turned so as to lie against the spout, its base impinges against one of the projections  $w'$  on the opposite side of the spout. It then holds a planting of grain above its point till the latter is turned in the opposite direction. The grain then descends into the furrow. The block thus acts as a pocket alternately on each side.

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

1. The combination of the main frame and seed-bearing frame pivoted together, the curved rack-bar secured to the main frame within reach of the seat, the shaft journaled at one end in said plate concentric with the rack and in a standard at the opposite end, the le-

ver-handle having its inner end rounded to rest on the shaft, the pawl, the mechanism, substantially as described, to actuate the same, the plate provided with adjusting-holes to adjust the lever-handle laterally by means of a screw, and the rod connecting the projections on said plate with the rear end of the seed-box frame, substantially as specified.

2. The combination of the seed-box frame, the tongue secured loosely to the front rail thereof, so that it can move in a vertical plane thereon, the bottomless casing secured to the rear rail of said frame and holding the rear end or heel of the tongue, and the longitudinally-slotted adjusting-plate provided with shoulders of different heights, substantially as specified.

3. The combination of the yokes provided with the openings and notches, as described, and having their bifurcated lower ends pivoted on a rail, G, adjustably secured to and above the seed-boxes by angle-brackets  $g$ , the systems of pulleys J, each composed of the upper and lower guide-plates,  $j^2$   $j$ , the plate  $j$  supporting both pairs of pulleys in a system, and the plate  $j^2$  connecting and having the front pair of said pulleys, as described, and pivoted by plate J on a plate or bracket,  $j^3$ , secured to rail G above the brackets  $g$ , the wire provided with swivel-joints and hemispherical buttons, and mechanism, substantially as described, whereby the vibrations of the yokes will discharge the grain from the seed-boxes.

4. In a check-rower planter provided with the yokes and link-wire, substantially as described, the systems of pulleys J for the wire, each system composed of an outer and inner pair of grooved pulleys journaled in the lower recessed metal guide-plate,  $j$ , and upper plates,  $j'$   $j^2$ , the plates  $j$   $j^2$  having diverging directing-flanges on their outer ends, the bracket  $j^3$ , having stop-projections  $j^4$ , and secured to the cross-bar of the machine, and having the lower guide-plate pivoted upon it at a point midway between the bearings of the inner pair of pulleys, and a lug depending from the lower surface of the plate  $j$ , adapted to abut against the stops  $j^4$  and limit the movement of the pulley system, all substantially as and for the purpose specified.

5. The combination of the seed-boxes, each having a perforated ratchet seed-wheel, R, rotating therein, the plate P, secured within the seed-box above the wheel and having a central flanged opening,  $r$ , and a spring-controlled seed-cut-off block,  $r'$ , protected by a suitable boxing,  $r^2$ , secured to the plate P, a rectangular reciprocating frame, O, provided with spring-controlled pawls Q, to actuate the wheel R and stops  $q^2$ , to hold the wheel in positions for delivering the seed, as described, and lugs  $q^3$  on the frame of the seed-box, adapted to be struck by a projection of the pawls Q and cause the pawls to positively engage with the ratchets of wheel R, mechanism, substantially as described, for connecting frames O with the



vibrating yokes, and the systems of pulleys J, constructed as described, secured above the seed-boxes and adapted to direct the actuating-wire through the yokes, all substantially as  
5 specified.

6. The combination, with the seed-delivery boxes F and reciprocating frames O, constructed substantially as described, and suitable mechanism for operating the same, of the  
10 semicircular seed-delivering spouts or troughs S, suitably connected at their upper ends with the seed boxes F, so as to receive grain therefrom, and extending thence downwardly and rearwardly to the furrow-opener, the cross-  
15 pieces *u w* at the upper and lower parts of the trough, respectively, the angular projections *w' w'*, formed on the sides of the trough, the angular cut-off block W, pivoted at its lower widest end to cross-piece *w* and the trough-

bottom, and having its upper end adapted to lie 20 snugly below either projection *w'*, and a lever, U, pivoted about centrally to the cross-piece *u*, and pivotally connected at its lower end to the upper end of block W, and having its upper end entering a slot, *o*, formed on the side 25 of frame O, so that the reciprocations of said frame will operate the lever, and consequently block W, all constructed and adapted to operate substantially in the manner and for the purpose specified. 30

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

JOSEPH D. SMITH.

Witnesses:

J. A. LUNDGREN,

G. O. WILLIAMS.