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J. K. P. SHELTON.

COTTON PLANTER.

No. 351,843. Patented Nov. 2, 1886.

Fig. 1.

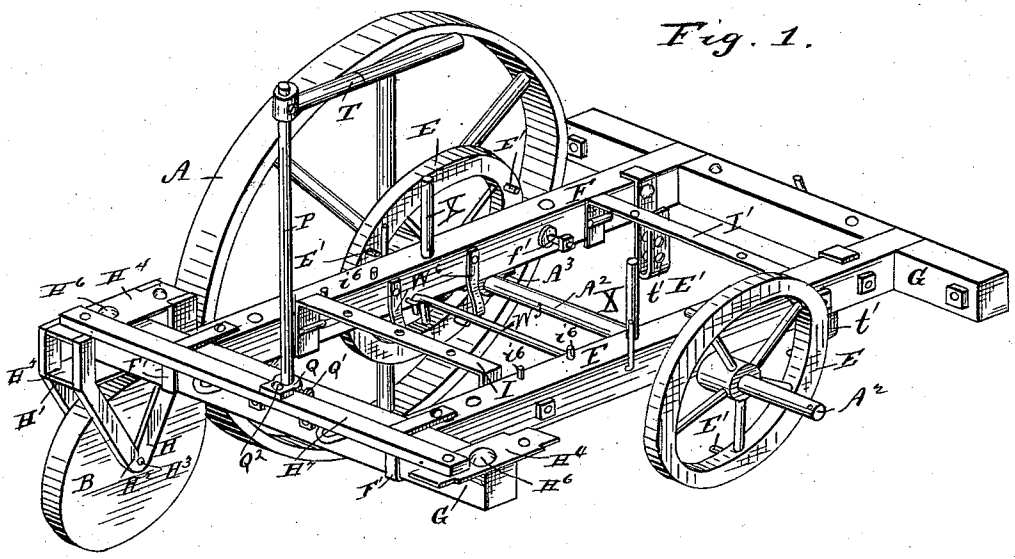


Fig. 25.

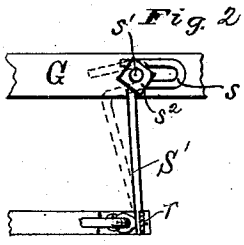


Fig. 8.

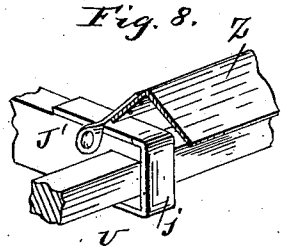


Fig. 2

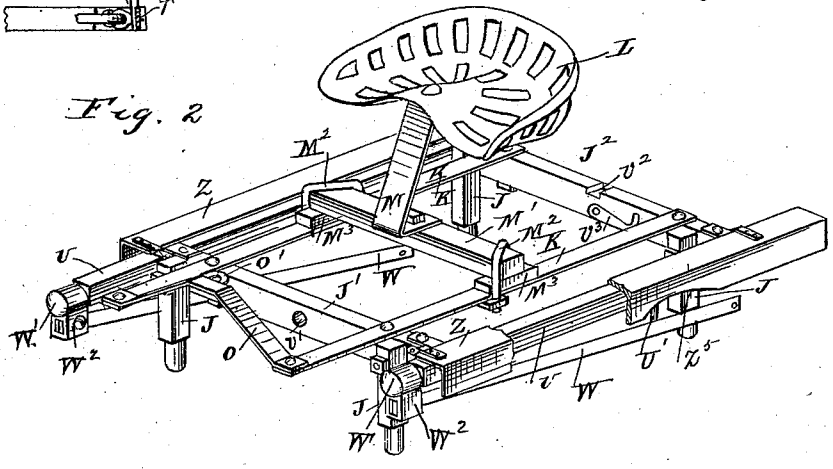
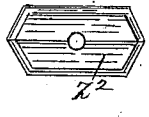


Fig. 24.



Witnesses

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& William B. King

(No Model.) 5 Sheets—Sheet 2.

J. K. P. SHELTON.

COTTON PLANTER.

No. 351,843. Patented Nov. 2, 1886.

Fig. 3.

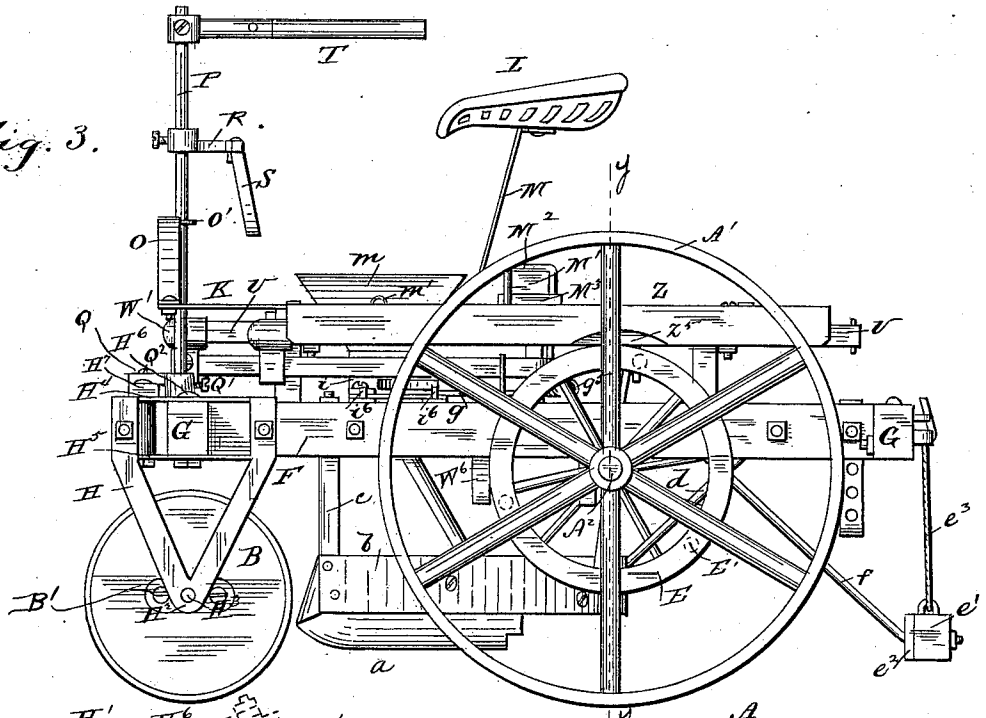
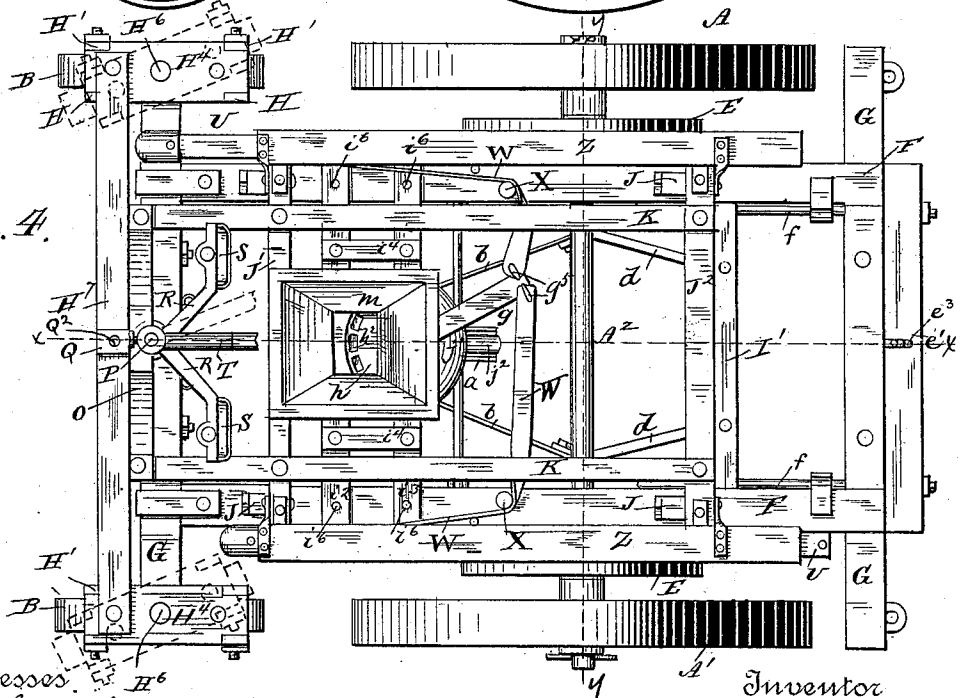


Fig. 4.



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(No Model.) 5 Sheets—Sheet 3.

J. K. P. SHELTON.

COTTON PLANTER.

No. 351,843. Patented Nov. 2, 1886.

Fig. 5.

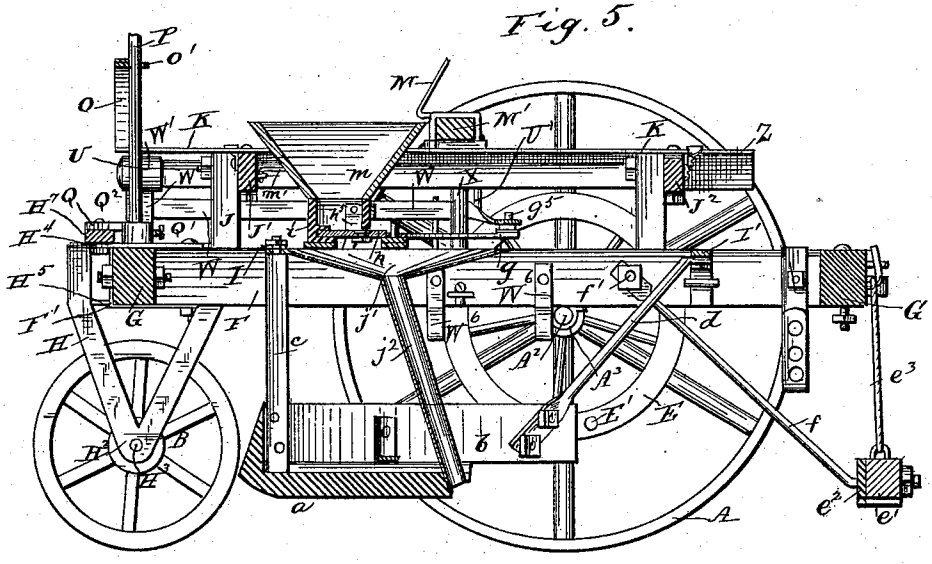


Fig. 9.

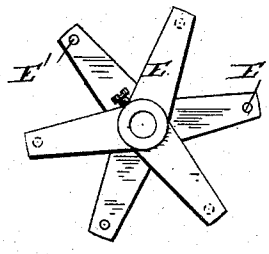


Fig. 10.

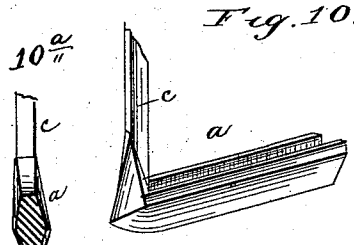


Fig. 22.

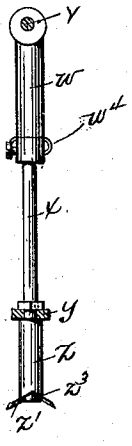


Fig. 23.

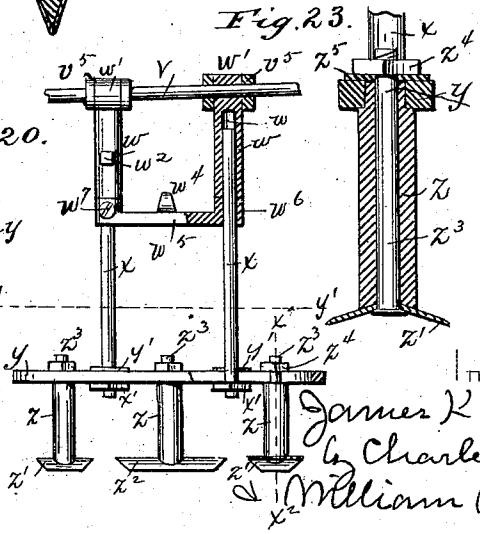
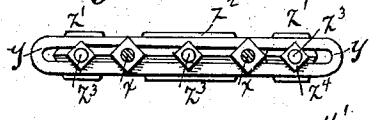


Fig. 20.

Fig. 21.



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J. K. P. SHELTON.

COTTON PLANTER.

No. 351,843. Patented Nov. 2, 1886.

Fig. 6.

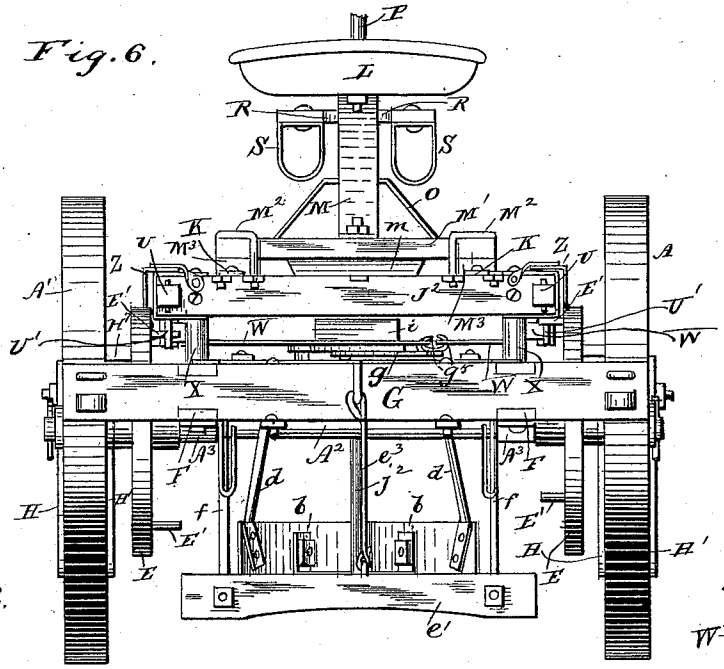


Fig. 12.

Fig. 11.

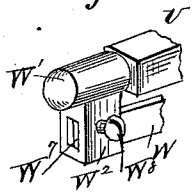


Fig. 7.

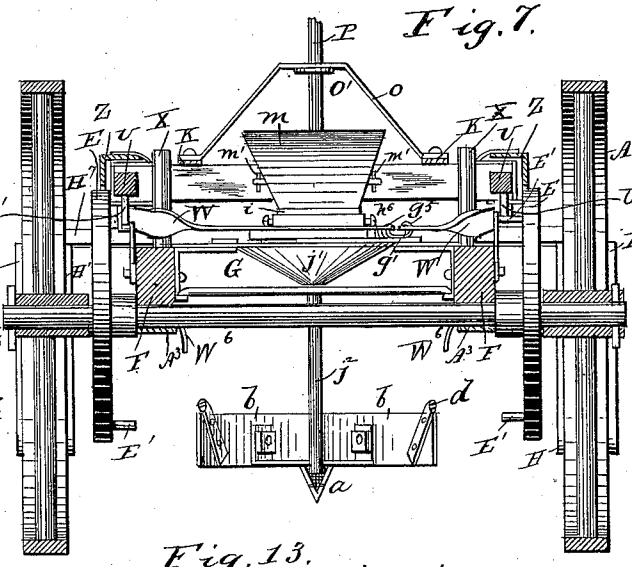


Fig. 15.

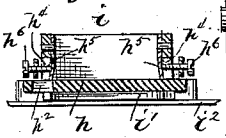


Fig. 14.

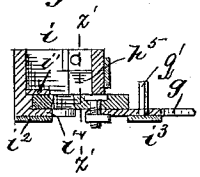
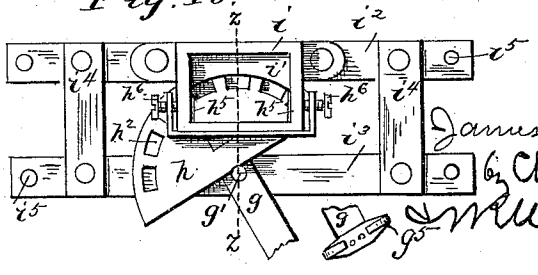


Fig. 13.



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(No Model.) 5 Sheets—Sheet 5.

J. K. P. SHELTON.

COTTON PLANTER.

No. 351,843. Patented Nov. 2, 1886.

Fig. 16.

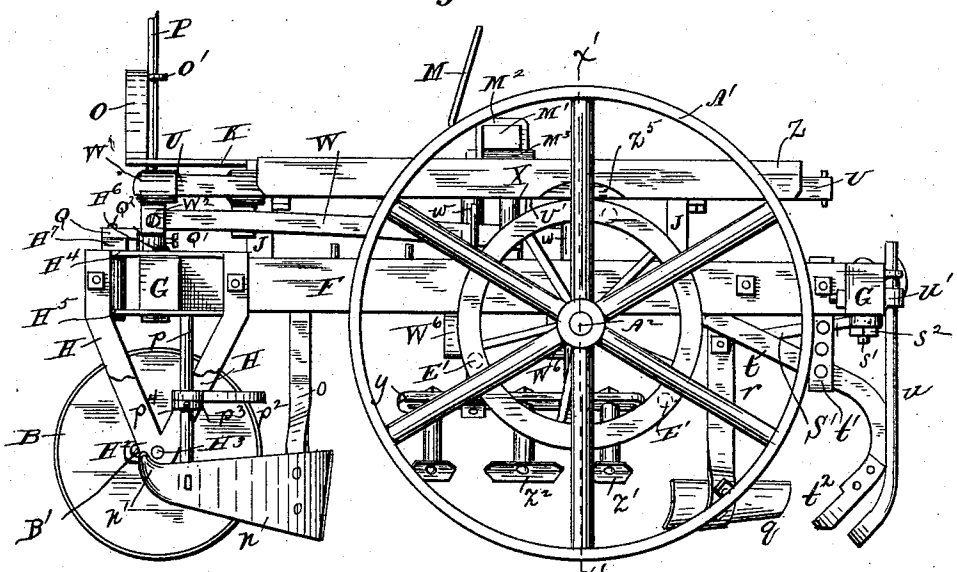


Fig. 18.

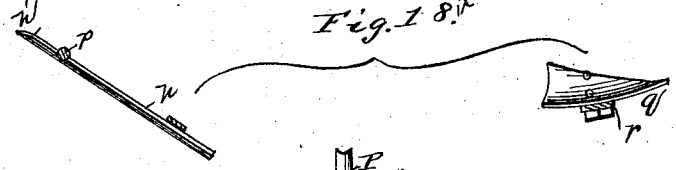
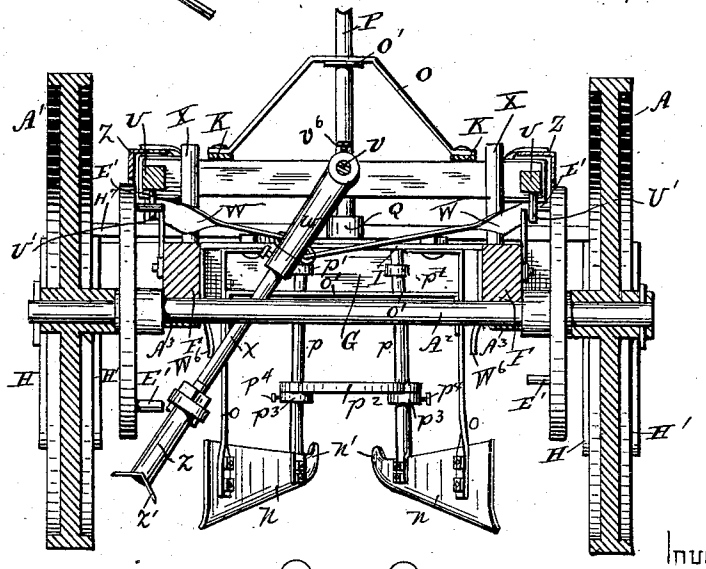
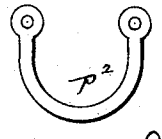


Fig. 17.



Witnesses:
E. D. Smith
J. C. Turner

Fig. 19.



Inventor:
James K. P. Shelton
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UNITED STATES PATENT OFFICE.

JAMES K. P. SHELTON, OF GASTON, ALABAMA.

COTTON-PLANTER.

SPECIFICATION forming part of Letters Patent No. 351,843, dated November 2, 1886.

Application filed December 23, 1885. Serial No. 186,554. (No model.)

To all whom it may concern:

Be it known that I, JAMES K. P. SHELTON, a citizen of the United States, residing at Gaston, in the county of Sumter and State of Alabama, have invented certain new and useful Improvements in Cotton-Planters, of which the following is a specification, reference being had therein to the accompanying drawings.

Figure 1 is a perspective of the lower main frame, one of the driving-wheels and one of the steering-wheels being removed. Fig. 2 is a perspective of the upper frame. Fig. 3 is a side elevation of the machine when the parts are arranged for planting. Fig. 4 is a top view of that in Fig. 3. Fig. 5 is a longitudinal central section on the line *x x*, Fig. 4. Fig. 6 is a rear view of the same. Fig. 7 is a vertical transverse section on the line *y y*, Figs. 3 and 4. Fig. 8 is a perspective of a part of one of the sliding bars and the adjacent parts. Fig. 9 shows a modification of the devices for reciprocating the sliding bars. Fig. 10 is a perspective of the opener. Fig. 10ª is a cross-section of the opener. Fig. 11 is a perspective of the front end of one of the sliding bars. Fig. 12 is a section through the same. Fig. 13 is a plan view of the seed-distributer and its frame. Fig. 14 is a section on the line *z z*, Fig. 13. Fig. 15 is a section on the line *z' z'*, Fig. 14. Fig. 16 is a side view of the devices when arranged for chopping. Fig. 17 is a vertical transverse section on the line *x' x'*, Fig. 16. Fig. 18 shows a front and rear scraper. Fig. 19 is a plan view of the stirrup which holds the front ends of the scraper. Fig. 20 is a view in side elevation, partly in section, of the chopping devices. Fig. 21 is a section on the line *y' y'*, Fig. 20. Fig. 22 is an end view of the devices in Fig. 20. Fig. 23 is a section on line x^2 x^2, Fig. 20, on an enlarged scale. Fig. 24 is a plan view of one of the chopper-blades. Fig. 25 is a bottom plan of one of the adjusting-bars for the rear scrapers.

The main frame of the machine is composed of the side longitudinal sills, F F, and the cross-girts G G. These are framed together, so as to provide a strong support for the other devices, the framing being preferably effected in the way shown. At the front ends of the side sills, F, there are metal stirrups F', surrounding the cross-girt G. Preferably, the girts G G project beyond the outer sides of the sills F, in order that the projecting parts may be utilized for purposes to be hereinafter described. This main frame is mounted upon the drive-wheels A A', the latter being upon the axle A^2, which is secured in boxes A^3, situated preferably a short distance back of the center of the machine longitudinally. The drive-wheel A is made fast to the axle, while the wheel A' is loose thereon, so that the former can be utilized for transmitting motion to the various operative parts, while at the same time the machine can be turned without having the drive-wheels held rigidly together. If desired, ratchets of any of the well-known forms may be used in connection with the drive-wheels.

At the front of the machine there are two supporting caster-wheels, B B. These are mounted and attached to the frame in such way that they can be oscillated to assist in guiding the machine in the desired direction. The wheels B B proper may be made either of wood or of metal. When made of wood, they should be provided with a metal tire, as shown in Figs. 3 and 16, and should have metal plates B' B' fastened to the faces at the center, to act as a re-enforce around the shaft or axis upon which each is mounted. I have shown that form of devices which I prefer for connecting these wheels B with the frame.

H H' are hangers converging downwardly to the bearing at H^2, wherein is mounted the shaft H^3 of the wheel B, there being preferably two of these hangers on each side of the wheel. If desired, the whole can be cast integral. At the upper end there is a plate, H^4, above the girt G, and below the girt there is a second plate, H^5, these plates being either cast with or rigidly secured to the hangers H H'. By means of a pivot at H^6 the plates and hangers are joined to the girt G. It will be understood that there is one of these wheels B mounted in this manner upon each side of the machine. They are joined by a bar, H^7, pivoted at its ends to the plates H^4. By moving this bar H^7 to the right or the left the wheels B B will be correspondingly turned, and the machine can be readily guided in either direction.

By employing two V-shaped hangers, H H',

one on each side of each steering-wheel, in the lower ends of which is mounted the steering-wheel axle, and connecting their upper diverging ends by a plate or plates, through which passes (between the upper ends of the hangers) the bolt by which the hangers and the wheel they carry are connected to the frame of the machine, the wheels are supported in a rigid manner, so that there is no undue strain upon any of the parts when the wheel is turned, even though the soil be soft, and at the same time the supporting-standards are pivoted to the frame directly over the central line of the wheel-axle, thus permitting it to be turned with the least possible exertion and the least possible strain upon any of the parts.

With the devices last described I have combined mechanism for readily operating the bar H' and wheels B.

P is a shaft situated vertically. At the lower end it is stepped in the girt G and carries a forwardly-projecting arm, Q, either integral with the shaft or secured thereto by key or set-screw, as at Q'. This arm is pivoted to the bar H' at Q^2. At a suitable point above the arm Q is attached a handle, T, this being of any convenient length, and by which the driver can with his hand readily turn the wheels B B. Below this handle there are stirrups S S, one to the right, the other to the left, of the shaft P, and both connected therewith by one or more bars, R. When the driver is riding upon the machine, as hereinafter provided for, his feet can be placed in the stirrups S, and by means of them he can guide the machine when his hands are otherwise occupied. To the frame thus constructed and mounted, a team can be connected in any preferred way.

Above the main frame I place a supplemental frame, consisting of the cross-bars J' J^2 and longitudinal bars K K. This upper frame is supported upon and connected to the lower main frame by standards J J, bolted to the cross-bars J' J^2, said standards being preferably detachable from the main frame, so as to permit the parts of the machine to be readily taken apart for repair or other purposes. The longitudinal bars K K may be of any material, though I prefer to have them somewhat elastic, that they may serve to advantage as the support of the driver's seat. The latter is represented by L, it being carried by a spring, M, which at the lower end is secured to the sill M'. This sill is fastened rigidly in place by means of stirrup-bolts M^2, it resting upon pillow-blocks M^3. By loosening the nuts upon the lower ends of the stirrup-bolts M^2, the cross-bar M' and seat carried thereby may be adjusted toward and from the steering mechanism, which, when the feet-steering devices are used, is very desirable, in order to enable a rider of any size and length of leg to easily reach the stirrups S. The bars K K project forward of the cross-piece J', and at their front ends carry a cross-brace, O, which at the center is provided with a bearing or guide, O', for the upper part of the steering-shaft P.

Having thus described the main features of the frame-work of the machine, I will now set forth the devices which I use for planting.

The seed is placed in the hopper *m*. This is supported upon the top frame by means of hooks *m'*, carried by the hopper, and eyes on the cross-bar J'. At the lower end the hopper communicates with the receiving-box *i*, which is formed with an upper receptacle and a plate, *i'*, below, this latter having a curved outline, as shown in Figs. 13, 14, and 15. This receiving-box is secured to a frame having cross-bars i^2 i^3 and joining-bars i^4. The cross-bars i^2 i^3 have apertures i^5, adapted to receive pins i^6, projecting upwardly from the main frame. With these the seeder-frame can be connected, and from them it can be detached with great readiness. The movable or distributing part consists of a plate, *h*, and a lever, *g*, the former being circular in outline and fitted to a correspondingly-shaped seat in the bottom of the receiving-box *i*. The plate and lever are pivoted to the cross-bar i^2 at *g'*, this pivot being the center of the curve of the edge of the plate *h*, so that the plate can be oscillated from side to side, and at the same time have its edge fitted tightly in its seat. The plate *h* is provided with a series of apertures, h^2, on a curved line parallel with the edge. When the plate *h* is oscillated, one or more of these apertures is drawn out to one side of the box, and then one or more drawn out at the opposite side, and in this way the seed can be rapidly but uniformly withdrawn in such manner as to form substantially a continuous stream. The apertures h^2 may widen toward the bottom, so that the seed shall readily pass or drop out. At h^4 h^4 there are openings in the side of the receiving-box, which are closed by means of springs h^5 upon the inside of the box. Each spring is rigidly secured at the top edge, and by means of them the regulating of the feed is effected. The springs can be pushed in or let out by means of set-screws h^6, bearing against the faces of the springs.

The lever *g* and plate *h* are operated as follows: E E represent wheels secured to the axle A^2, and carrying three or more pins, E', by which reciprocation of bars U U is effected. These bars are carried by the upper frame, they being mounted in bearings formed for them in the ends of the cross-bars J' J^2. The bearings are preferably formed by recessing the ends of the bars, and inclosing said ends with metal stirrups *j*. (See Fig. 8.) Each bar U is provided with a downwardly-projecting pin, U', so arranged as to lie in the path of the pins E' on wheel E.

W represents a strap, chain, or other flexible device, attached to the front end of the bar U. It is preferably connected by means of a metal thimble, W', fitted to the front end of the bar U, the thimble carrying a socket-piece, W^2. The strap W has its end passed through the aperture in the socket-piece, and said end is clamped by means of an iron plate,

W', and a wedge driven tightly against the strap by means of a set-screw, W^8. The strap W on each side of the machine passes backward from its point of attachment with the bar U, and is then turned inward around a standard, X, preferably round, and carried by the main frame.

The above-described lever g is at its rear end provided with two hooks, $g^5 g^5$, preferably formed upon a plate secured to said lever. With these hooks g^5 the straps W are connected, the straps having apertures for this purpose.

The wheels E E are so arranged on the axle A^2 that the pins E' on one wheel shall not be directly opposite the pins on the other, but so that they shall be respectively opposite the centers of the spaces between said pins on the other; and it will be seen that these pins E' on wheels E will alternately engage with the bars U, respectively, and push them forward. As the right-hand bar moves forward it draws the lever g to the right by its strap W, and said lever, by strap W on the other side, draws back the other bar, U—that is to say, the pins E' on the wheels E E not only drive forward the bars U, but also return them. In this way a rapid oscillation of the lever g is effected and the seed dropped, as above described.

It will be seen that the rigid bars U, which receive motion directly from the drive-wheels, reciprocate in rectilineal lines, whereby several advantageous results are attained. In the first place, there is less liability of the bars becoming clogged by dirt or weeds and grass than were the bars pivoted and given a vibratory motion. Further, they travel over a comparatively small area, and hence may be covered by shields of simple form, as shown. Again, these bars may be mounted and made to travel close to the longitudinal bars or sills of the frame, and this rigid rectilineally-reciprocating bar enables me to mount it upon a supplemental frame, as shown, which may be easily and quickly applied to the main frame of the machine.

The seed which drops from the apertures h^2 is received into a funnel, j', from which it passes through a tube, j^2, to the opener. This opener is composed, mainly, of the presser-bar a and wings b. The press-bar a is made of cast-iron, and the front edge is tapered on both sides toward the point, this edge being somewhat dull. The sides of the presser bar a converge downwardly to form a dull edge at the bottom. The wings b are at their front ends fitted into seats formed in the press-bar a and are there riveted, the rivets also securing the vertical bar c, by which the front end of the opener is connected to a supplemental cross-bar, I, carried by the main frame. The ends of this cross-bar are fastened in staples or equivalent holders, so that said bar can be readily removed, if desired. The rear ends of the wings b are supported from the main frame by means of hangers d and a detachable cross-bar, I', the latter being fastened to the frame substantially similarly to that above described. In the top of the opener there is a passage or guide for the seed, to which the latter is directed by the tube j^2.

$e' e^2$ represent the covering block, by which the earth is placed over the seed, it forming something of a ridge. Preferably it is formed of a wooden part, e', and a metal facing, e^2. It is supported by means of the bars or inclined hangers f, which at their upper ends are pivotally connected with the sills F by pivots f'. These bars or hangers f have their lower and rear ends passed through the block and secured by nuts. e^3 is a rope connected to the central part of the block, and also attached to the rear girt, G, it providing a flexible support for the block, the latter being allowed to rise and fall, as required. The plate e^2 not only acts as a re-enforce for the wooden part, but also provides the required weight.

The operation of the parts above described for planting will be readily understood. Said parts are arranged as described and shown. The hopper m is supplied with the seed and the machine started along the desired line. The wheels E E in revolving oscillate the distributer g h, through the parts U and W, as above described. The apertures h^2, beneath the distributing box i, become filled with the seed, and as they pass out from under the box and from above the plate i' the seed immediately drops into funnel j', the peculiar shape of the apertures h^2 insuring this instant dropping. It thence passes down the tube j^2 to the rear end of the opener, where it drops into the furrow made by the latter, and is then covered by the block $e' e^2$. By means of the steering devices the driver can plant the row along any desired line, and has full control of the machine, being able to guide it accurately either with his feet or hands. If the soil has been ridged up previous to planting, the machine is placed over the ridge, and the various parts are correspondingly adjusted—such as the opener and the covering-block. When it is desired to stop the motion of the distributer, it is necessary to merely unhook one of the straps W.

I will now describe the construction, arrangement, and operation of the devices by which the chopping is effected.

It will be understood that the devices above described for planting have been removed—namely, the hopper m, the funnel $j' j^2$, the opener a b, its supporting-bars c d, the distributer, the supporting-bars $i^2 i^3$ of the latter being lifted off from the pins i^6, and the covering-block $e' e^2$, the main parts of the frame-work, &c., being retained for this purpose of chopping. For said purpose the special devices consist, mainly, of front scrapers, n, rear scrapers, q, and the intermediate swinging choppers. The front scrapers, n, widen rearward and downward. The front ends are curved upward and outward, forming a toe, n', on each, these toes being so shaped as to have a peculiar action upon the soil, and of sufficient length to be easily seen above the latter. Each scraper is

at the front end secured to an upright bar, p, by two bolts. The upper ends of the bars pass through the eyes of eyebolts p', said bolts being inserted into the front girt of the main frame.

p^2 represents a stirrup or U-shaped connecting-piece, which joins the two bars p p, it having eyes through which said bars pass. The latter are also provided with collars p^3 and set-screws p^1 below the connecting-piece p^2. By examining the drawings, it will be seen that the distance between the eyes of the connecting-piece p^2 is greater than that between the eyebolts p', and therefore said connecting-piece can be used to hold the front ends of the scrapers at one or another of various distances apart. To thus adjust them, the eyebolts p' and collars p^3 are loosened, the bars p p are arranged at the desired angle of divergence, the connecting-piece p^2 being brought to the desired position, after which said collars and screws are again made fast.

Each scraper n is at its rear end secured to a flat vertical bar, o, and each of these bars o is at its upper end secured to the cross-bar I, above described. At points below their upper ends these parts o are joined by a connecting-brace, o'. The action of these scrapers is such as to remove the soil somewhat from each side of the row, leaving a narrow bar of earth on top of the ridge, in order that the chopping-hoes may act effectually. Said hoes are constructed and attached as follows:

v is a detachable shaft adapted to be mounted in a bearing at v' in the above-described cross-bar J′ of the top frame. The rear end of the shaft v res's in an open recess at v^2 in the rear bar, J^2, the shaft being flattened, in order to fit tightly in its seat.

v^3 is a pivoted hook adapted to swing over the shaft and hold it in its seat, there being at v^4 a stop, consisting of a peg, which locks the hook in position. This shaft v provides the immediate support for the frame of the hoes.

w w represent two bars hinged to the shaft v by eyes w', and at the lower ends provided with sockets and set-screws w^2, transverse to said sockets. These are held in the proper positions on the shaft by means of collars v^5 and set-screws v^6, as will be readily understood from the drawings. In the sockets aforesaid are fitted two downwardly-extending bars, x x, their upper ends being fastened by the set-screws w^2. Their lower ends are secured to a plate or bar, y, the latter having a slot extending longitudinally from one end to the other, and said bars x x being at their lower ends squared to fit said slot, and having nuts x' and washers y', whereby they are rigidly fastened to said plate or bar y. To this bar y are attached the hoe-shanks z z. These are tubular longitudinally, and at their upper ends are squared to fit the aforesaid slot in the bar y. The lower ends are concave, and against said ends rest the hoe-blades z' z^2.

z^3 represents a bolt or threaded rod, there being one for each hoe-blade and shank z. It passes through the hoe-blade and the shank, it being headed at the lower end and threaded at the upper, and by means of a nut, z^4, and a washer, z^5, said parts can all be rigidly clamped to the plate or bar y.

The hoe-blades are of steel, and are concavo-convex in cross-section. The corners are beveled, so that each is hexagonal. When shaped thus, they are equally effective in whatever direction they move. The front and rear blades, z' z', may be of the same length as the intermediate blade, z^2, or they may be shorter, as desired. It will be seen that these blades can be very readily adjusted, so as to have them any desired distance apart, it being only necessary to loosen their fastenings and slide them one way or the other on the bar y and again fasten them. A vertical adjustment can also be attained very easily by loosening the set-screws w^2 and sliding the bars x up or down in the socketed parts w and again tightening said screws.

The number of plants left in the row can be regulated by the number of hoe-blades employed. When three hoes are used, they leave twice as many plants as when two are employed; but it will be seen that when two are used the extreme length of the cutters is the same as that when three are used.

The same devices are used to reciprocate the hoes that were used to reciprocate the seed-distributer—that is to say, wheels E E, bars U, and straps W. The straps are connected to a double hook, w^1 w^4, to which the strap W can be hitched. This double hook is carried by a bar, w^5, connecting the hanger-bars x by means of eyes w^6 and set-screws w^7.

In order to guide and brace the lower parts of the swinging chopper from the main frame, I employ a detachable cross-bar, W^3, which is fastened to the main frame by means of hooks on the ends of the bar and staples on the frame. The bar F is notched, so that this cross-bar can easily swing out when it is to be detached. The chopper is so arranged that one of the swinging hangers x is in proximity to the axle A^2, the latter serving to guide and brace it, while the other hanger x is guided and braced by the aforesaid bar W^3.

The rear scrapers, q, are, in general shape, the reverse of the front scrapers, n—that is to say, they are widest at the front ends and narrow somewhat toward the rear. They are concavo-convex in vertical section; but the curvature is such that the top and bottom edges of each are more nearly in a vertical plane at the rear end than they are at the front. Each is supported by means of a hanger, r, secured to its scraper by two bolts at the lower end, and at the upper end bolted to the cross-bar I′. The two hanger-bars r are joined by a connecting-brace, r', preferably made of round iron and having its ends bent downward. Said ends are fitted into the eyes of eyebolts r^2, passed through the hangers r.

S′ S′ are regulating-braces, each having an aperture at the front end to receive an eyebolt,

r^2, and each being at the rear end formed with a slotted part, the slot being represented by *s*. Through this slot passes a bolt, *s'*, which engages with the rear cross-beam, G, it carrying a nut, s^2, adapted to bear strongly against the under side of the slotted part of the brace. The rear ends of the scrapers *q q* can be thrown farther apart or nearer together by moving the slotted part of these braces S in the necessary direction.

W^6 W^6 represent check-springs, of which there are four, two secured to one sill F and two to the other, the forward pair lying in the plane of the forward swinging hanger *x*, and the rear pair lying similarly relatively to the rear hanger *x*. These keep the hoes from swinging too far outward.

The operation of the devices last-above described will be readily understood. After the proper adjustments have been made—that is to say, after the forward scrapers, *n*, have been put in place and arranged properly both vertically and horizontally, and the rear scrapers, *q q*, have been suitably fixed in position, and the shaft *v* and the swinging choppers have been properly inserted and adjusted—the machine is advanced along the row, and as the wheels A E' E' rotate, the bars U and straps W are caused to swing the chopping-hoes from side to side, they acting to remove from the row the desired number of plants. As hereinbefore stated, the front scrapers leave a narrow bar of soil and the choppers cut through this bar. The rear scrapers, *q*, again bring up the soil on both sides to reform the beveled ridge along the plants.

In order to adapt the machine to cultivate also, I provide the following devices: *t t* represent bent iron beams, the forward ends of which are secured by the pivot-bolts to the frame-pieces F, and which are guided by means of stirrups *t'*, also secured to the frame-pieces F, these stirrups being perforated and adapted to receive pegs, by which the vertical position of each beam *t* can be regulated. The beams *t* carry foot-pieces t^2, adapted to receive plows or cultivator-shovels. Besides these, there are plows behind the drive-wheels, they being carried by bars *u u*, secured by eyebolts *u'* to the rear cross-piece, G, of the main frame. Instead of a wheel, E, use may be made of any device adapted to carry the pins, such as radiating arms, Fig. 9.

While I have shown and prefer to use two reciprocating bars, U, and operate them in substantially the manner herein provided for, yet it will be seen that a single sliding bar can be used, and the other parts can be somewhat modified to correspond to such a change.

Z Z represent two sheet-iron shields or fenders hinged to the top frame and adapted to cover the sliding bars U U. They may be recessed, as shown at z^5 z^5, to prevent interference with the wheels which carry the pins, above described.

The driver's seat can be readily adjusted forward or back, so that the one occupying it can be conveniently situated to the steering mechanism, or so as to throw the weight over the proper part.

I do not wish to be understood as limiting myself to the details of the construction shown, for in many respects they may be more or less modified or departed from without departing from the spirit of the invention with respect to said parts of the mechanism.

I do not herein claim the matters relating to the chopping and cultivating devices, having made those the subject-matter of another application, which I am about to file.

What I claim is—

1. The combination of the main frame, the seeding devices carried thereby, the driving-wheels, the steering-wheels, and the forked hangers H H', one on each side of one of the steering-wheels, and in the lower ends of which are mounted the wheel-shafts H^3, said hangers connecting the wheels with the main frame, substantially as set forth.

2. The combination of the main frame, the seeding devices carried thereby, the drive-wheels, the steering-wheels, and the forked hangers which support the wheels at their lower ends, the plates connecting the upper ends of the hangers, and the pivots passing through the plates between the ends of the hangers and connecting them with the main frame, substantially as set forth.

3. The combination of the main frame, the seeding devices carried thereby, the drive-wheels, the steering-wheels, the forked hangers which support the wheels at their lower ends, the plates *d*, connecting the upper forked ends of the hangers, the pivots connecting the plates with the main frame, the bar H^7, connecting said plates, and means for moving said bar in order to turn the steering-wheels, substantially as set forth.

4. The combination of the main frame, the seeding devices carried thereby, the steering-wheels, the vertical shaft connected with the steering-wheels, by which the steering-wheels are turned, and the stirrups for the driver's feet carried by said shaft, substantially as set forth.

5. The combination of the main frame, the seeding devices carried thereby, the steering-wheels, the vertical shaft connected with the steering-wheels, the bar R, transverse to said shaft and connected thereto, and the stirrups S, carried by said bar upon opposite sides of the shaft, substantially as set forth.

6. The combination of the main frame, the seeding devices carried thereby, the steering-wheels, devices, substantially as described, for moving said steering-wheels, and a driver's seat adjustable toward and from the steering devices, substantially as set forth.

7. The combination of the main frame, the seeding devices carried thereby, the steering-wheels, devices, substantially as described, for moving said steering-wheels, the longitudinal

elastic bars, and the driver's seat supported on said elastic bars adjustably relatively to the steering devices, substantially as set forth.

8. In a seeding-machine, the combination of the main frame, the seeding devices carried thereby, and a supplemental removable frame supported upon the main frame and carrying a driver's seat, and devices whereby the seeding devices are operated, substantially as set forth.

9. The combination of the main frame, the seed-dropping devices carried thereby, a rectilineally-reciprocating rigid bar, devices carried by the wheel which directly engage with and move said bar, and a flexible strap which unites the bar with the seed-dropping devices, substantially as set forth.

10. The combination of the main frame, the seed-dropping devices carried thereby, two oppositely rectilineally-reciprocating rigid bars connected with the seed-dropping devices, and means carried by the wheels which directly reciprocate said bars alternately, substantially as set forth.

11. The combination of the main frame, the seed-dropping devices, a supplemental frame carried by the main frame, a rectilineally-reciprocating rigid bar carried by the supplemental frame, means carried by the wheels for imparting motion directly to said bar, and a connection between said bar and the seed-dropping devices, substantially as set forth.

12. The combination of the main frame having the longitudinal sills F F, the seed-dropping devices, a supplemental frame carried by the main frame, rectilineally-reciprocating bars carried by the supplemental frame and mounted by the side of the sills F of the main frame, means for reciprocating said bars, and connections between said bars and the seed-dropping devices, substantially as set forth.

13. In a seeding-machine, the combination of the supporting-frame having cross-bars, the seeding devices, the reciprocating bars connected by suitable devices with the seeding devices and mounted in recesses in said cross-bars, and stirrups *j*, which confine said bars in the recesses, substantially as set forth.

14. The combination of the main frame, the seed-dropping devices carried thereby, a reciprocating bar, a flexible strap connecting said bar with the seed-dropping devices, a socket, W^2, carried by the bar and in which one end of the strap is inserted, and a clamping-piece which confines the strap in said socket, substantially as set forth.

15. In a seed-distributer, the combination of the seed-distributing plate, a receiving-box provided with openings for the outward passage of seed, springs which regulate the passage of seed through said openings, and means for adjusting said springs, whereby the amount of seed delivered may be varied, substantially as set forth.

16. The combination of the seed-box, the vibrating distributing-plate pivoted at *g'*, the lever *g*, attached to and projecting from the distributing-plate, the rectilineally-reciprocating bars U U, the straps X, connecting said bars with lever *g*, and means, substantially such as described, for alternately reciprocating said bars, as set forth.

17. The combination, with the main frame provided with pins or their equivalents, of the detachable frame adapted to be secured to the main frame by said pins, a seed-box attached to said detachable frame, and a distributing-plate also attached to said detachable frame, substantially as set forth.

18. The combination, with the main frame, of the detachable frame supported upon the main frame and having the cross-bars i^2 i^3, the seed-box secured to one of said cross-bars, and the vibrating plate pivoted to the other cross-bar, substantially as set forth.

19. The combination of the main frame, the seed-box, the distributing-plate, a reciprocating bar which moves said plate and the hinged shield which covers said bar, substantially as set forth.

20. In a seeder, the herein-described opener, consisting of the press-bar *a*, formed from a single piece of metal having the front tapering edge, and having also in the top thereof a seed groove or passage, substantially as set forth.

21. In a seeding-machine, the herein-described opener, consisting of the press-bar *a*, and the wings *b*, seated in recesses therefor formed in the press-bar, the press-bar being formed with the upper backward-sloping front edge and the lower backward-sloping edge and a beveled bottom edge, substantially as set forth.

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

JAMES K. P. SHELTON.

Witnesses:
WM. B. GORE,
B. T. BROWN.