

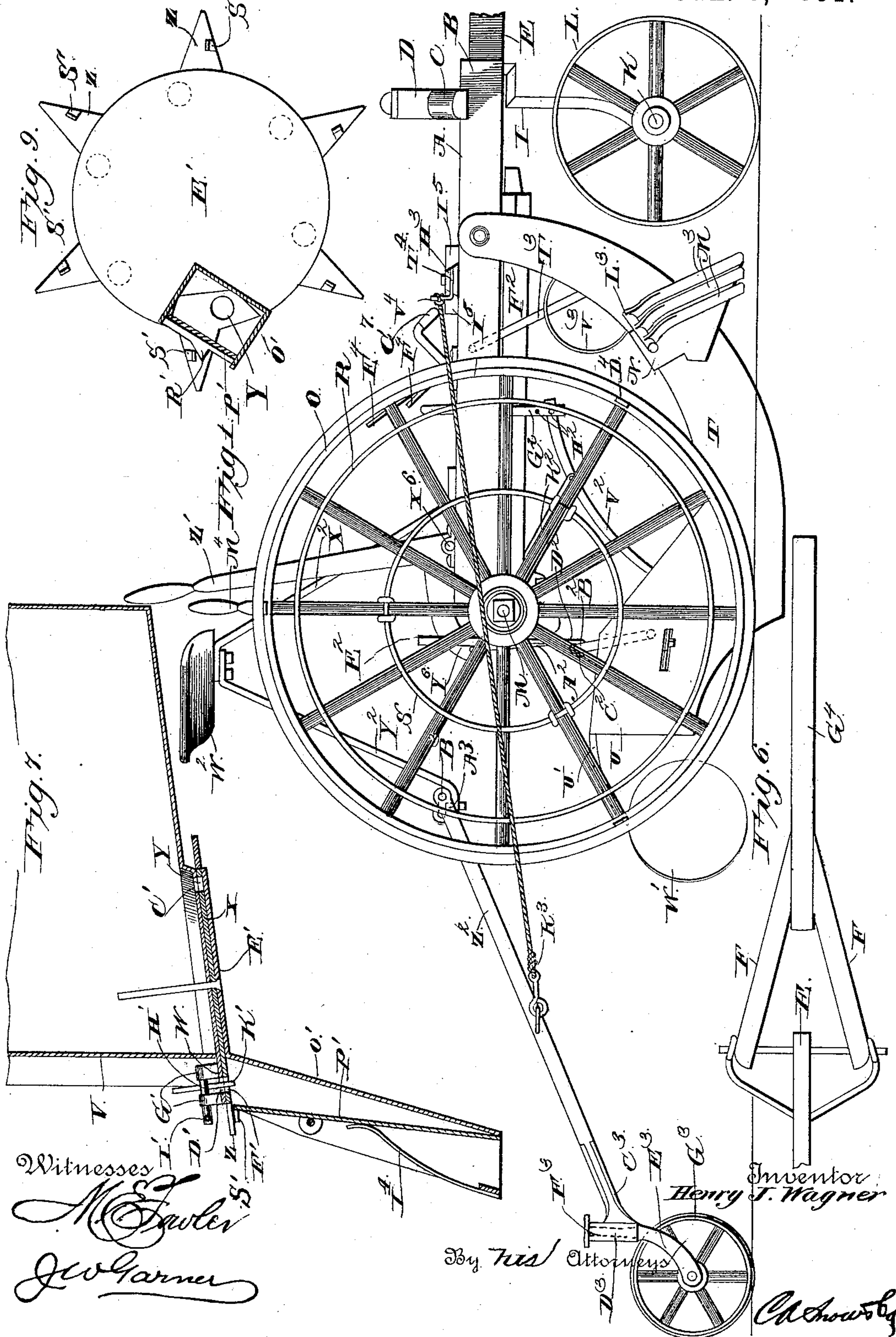
(No Model.)

3 Sheets—Sheet 1.

H. J. WAGNER.
CORN PLANTER.

No. 444,030.

Patented Jan. 6, 1891.



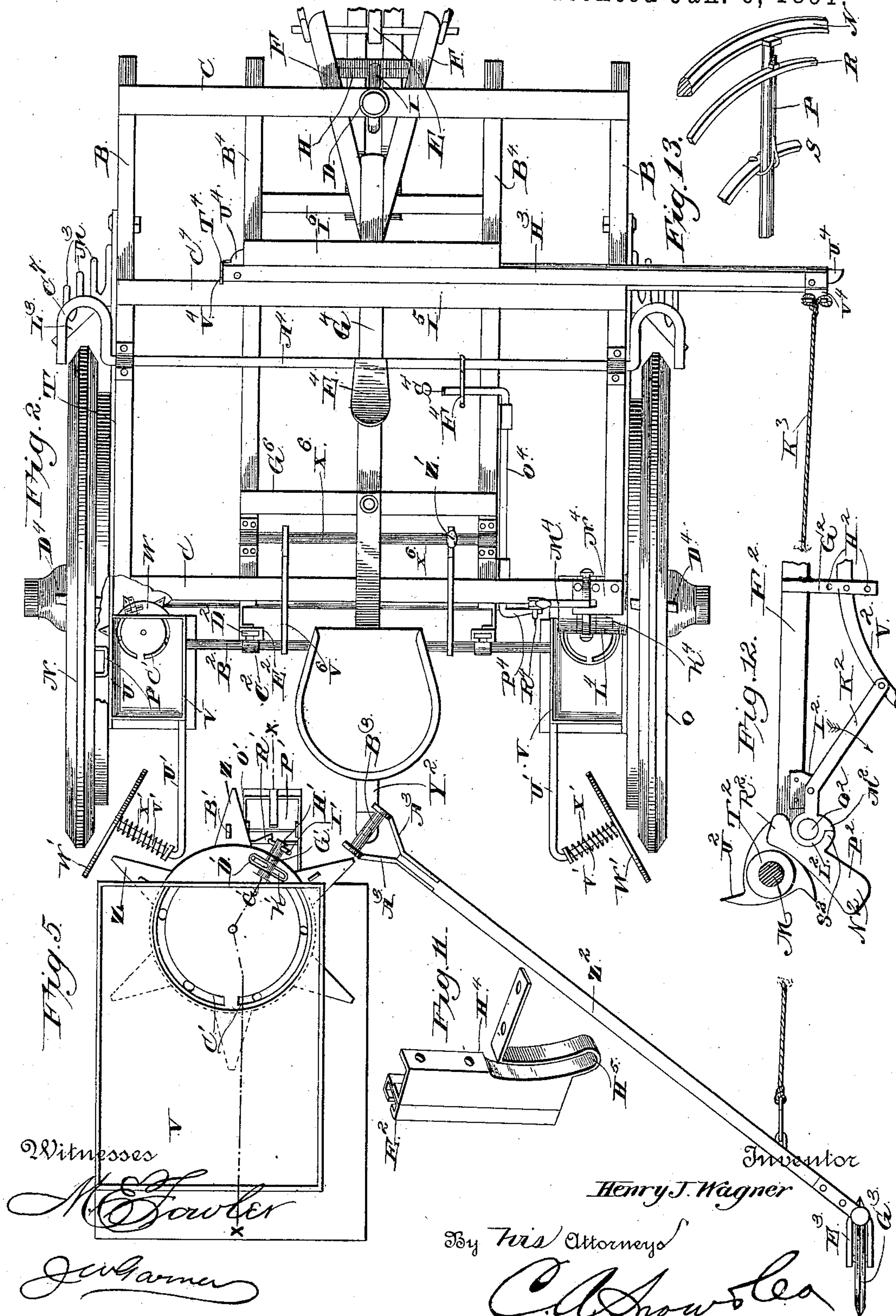
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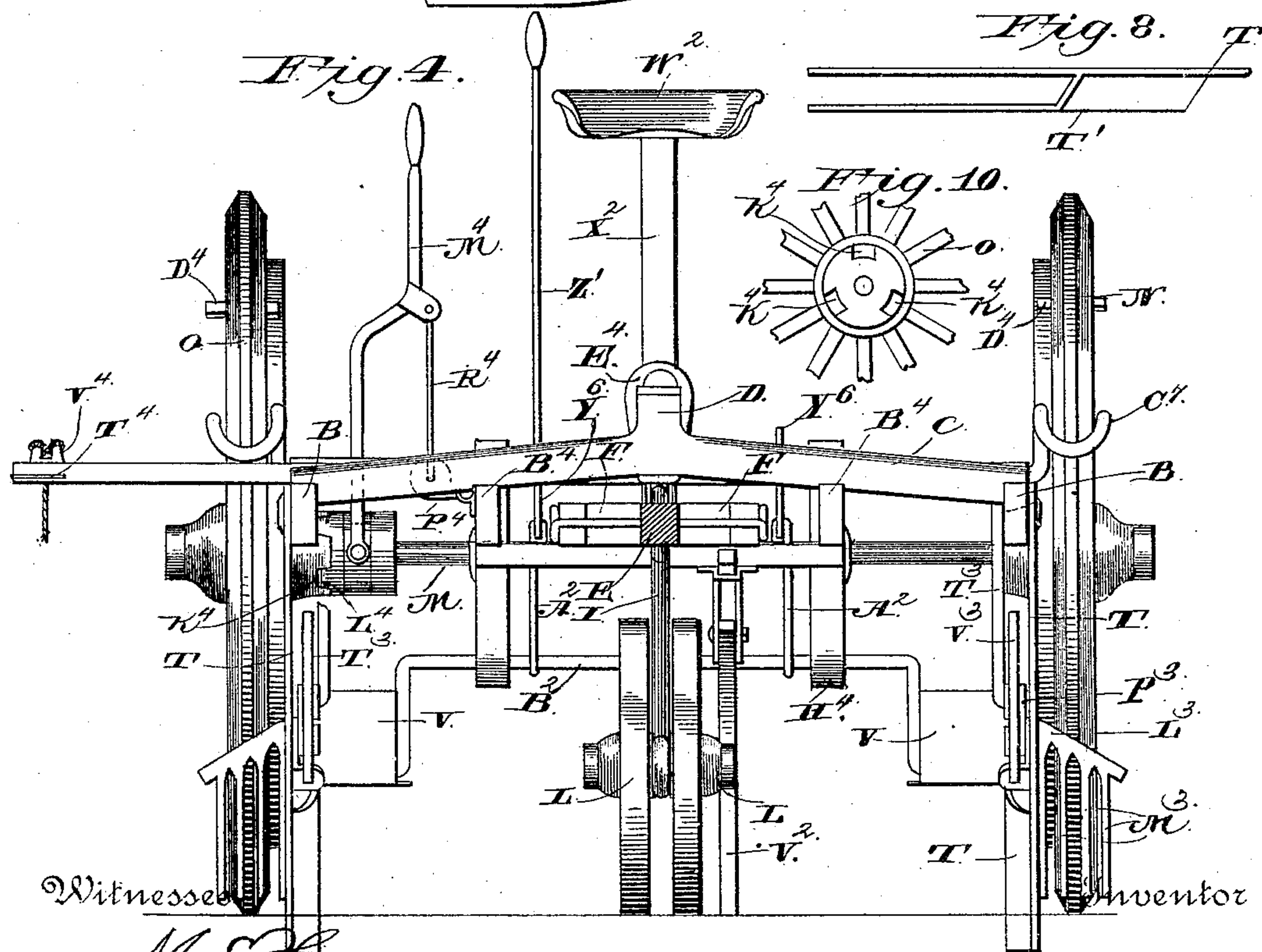
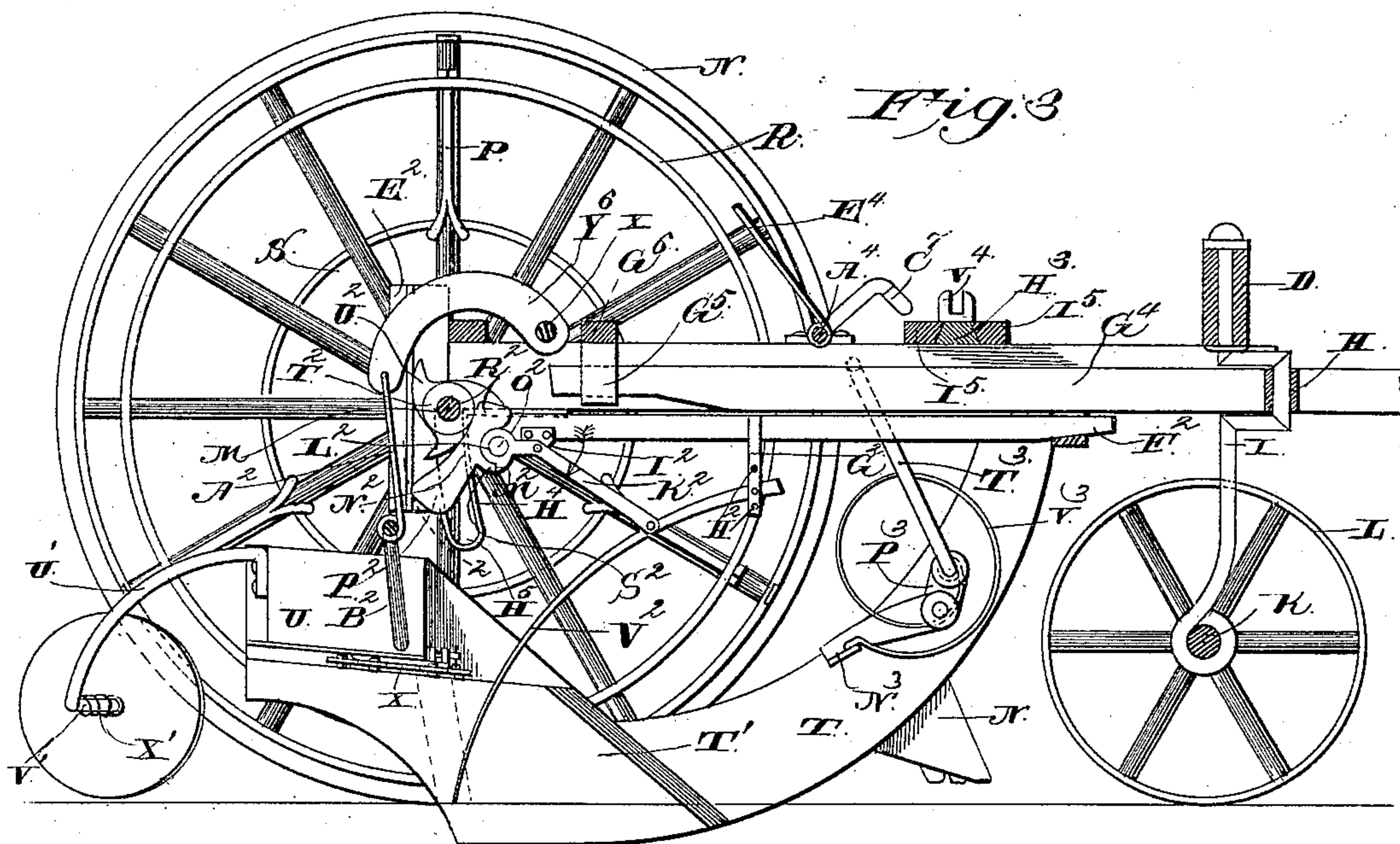
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3 Sheets—Sheet 3.

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Patented Jan. 6, 1891.



Witnesses

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Jew Harmer

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UNITED STATES PATENT OFFICE.

HENRY J. WAGNER, OF DAYTON, MISSOURI.

CORN-PLANTER.

SPECIFICATION forming part of Letters Patent No. 444,030, dated January 6, 1891.

Application filed July 7, 1888. Serial No. 279,263. (No model.)

To all whom it may concern:

Be it known that I, HENRY J. WAGNER, a citizen of the United States, residing at Dayton, in the county of Cass and State of Missouri, have invented a new and useful Improvement in Corn-Planters, of which the following is a specification.

My invention relates to an improvement in corn-planters; and it consists in the peculiar construction and combination of devices that will be more fully set forth hereinafter, and particularly pointed out in the claims.

This invention is an improvement on the corn-planter for which Letters Patent of the United States, No. 372,725, were granted to me November 8, 1887.

In the accompanying drawings, Figure 1 is a side elevation of a corn-planter embodying my improvements. Fig. 2 is a top plan view of the same. Fig. 3 is a vertical longitudinal sectional view of the same. Fig. 4 is a front elevation. Fig. 5 is an enlarged plan view of one of the hoppers. Fig. 6 is a detail view of the tongue and hounds. Fig. 7 is a sectional view of the hopper and seed-tube on line *xx* of Fig. 5. Fig. 8 is a detail top view of one of the runners. Fig. 9 is a bottom plan view of one of the hoppers, the seed-tube in section. Figs. 10, 11, and 12 are detail views. Fig. 13 is a detail perspective view showing the mode of attaching the tappet-rods to the wheels.

A represents the main frame of the machine, which comprises the parallel longitudinal bars $B B^4$ and the cross-bars $C C^4$, supporting the front and rear ends and an intermediate point of said bars and connecting the same together. The central portion of said front bar C is arched and has on its upper side an offset or boss D .

E represents the tongue, the rear end of which is pivoted between hounds F . Said hounds are arranged under the frame and have a cross-bar H , which is secured to a cranked vertical pivotal bolt I , the upper end of said bolt having its bearing in a vertical central opening in the front cross-bar C and boss D . A short transverse axle K is secured in an eye at the lower rearward curved end of the pivotal bolt, and on said axle are journaled a pair of guiding-wheels L of suitable

size. Projecting rearward from the hounds is an arm G^4 , the rear end of which is loose in a keeper G^5 , that is secured to a bar G^6 , which connects the bars B^4 near their rear ends.

By a movement of the tongue to the right or left the crank is moved in that direction, turning the bolt and facing the guide-wheels in the direction desired to turn. The curve at the lower end of said pivotal bolt brings that end in line with the upper straight end, keeping the guide-wheels under the center and balancing the forward end of the frame. From the rear ends of the bars B^4 depend curved arms H^4 , which have curved slots H^5 .

M represents a transverse shaft or axle, which is journaled in the slots H^5 of said arms H^4 at the rear ends of the bars B^4 . To one end of this shaft is rigidly secured a wheel N , and on the opposite end thereof is loosely mounted a similar wheel O . The peripheries of the wheels are beveled on opposite sides, thereby adapting the wheels to mash or crush through clods and loose earth and enabling them to obtain a firm bearing on the ground over which they pass, and thus direct the machine in a straight line. Each of these wheels has on its inner side a series of radial tappet-arms P , which are arranged at regular distances apart. The outer ends of these tappet-rods are passed through openings in the rings R , with which the wheels are provided, and are secured by means of nuts, and the inwardly-projecting ends of the said tappet-rods are bent outward at nearly right angles and bifurcated to form hook-arms, which pass on opposite sides of the adjacent spokes and engage the inner sides of inner concentric rings S , with which the wheels are also provided.

T represents a pair of curved runners, which have their front ends pivoted on the bars B , the rear ends of said runners being thereby free to move up and down. The rear ends of the runners are provided on their upper sides with vertical extension-plates U , and to the inner sides of said extension-plates are rigidly secured rectangular hoppers V . Journaled under the outer front corner of each hopper is a circular seed-plate X , having a series of openings or seed-cups Y arranged

in a circle, and also provided with a series of radial spurs Z, which project beyond the peripheries of the seed-plates and are arranged between the cups or openings thereof. Each
 5 of the said spurs is provided near its base on its upper side with a tappet or pin B' and on its under side out of line with pin B' with a pin or stud S'. The bottom of the hoppers are provided with segmental slots C', that
 10 uncover the openings or seed-cups Y, and each hopper has in that portion W of its bottom plate which projects beyond its front wall an opening D'.

E' represents stationary plates, which are
 15 arranged under the seed-plates. Each plate E' has an opening F' under the opening D' of the bottom of the hopper.

On opposite sides of the opening D' are bearings G', in which are journaled shafts
 20 H'. Said shafts have at their outer ends radial tappet-arms I', which are arranged in the paths of the tappets or pins B', and said shafts are further provided with radial ejector-arms K', that are adapted to sweep through the
 25 openings D' when the shafts are rotated for the purpose of forcing seeds from the seed-cups under the openings D' in the seed-plates, and thereby causing said seeds to drop, and consequently prevent any of the hills which
 30 are being planted from being missed by seed being pressed and bound in by the cut-off or otherwise.

The plates E' are rigidly secured to the hoppers.

O' represents inclined downward-extending tubes, which are rectangular in cross-section, and one of which depends from or may be part of each plate E', with its upper end under the seed-discharge opening in
 40 said plate. In each tube is arranged a pivoted valve P', which is kept normally closed against the bottom of the tube by means of a spring I', and the upper end of each valve has a projecting spur R' arranged in the path of
 45 the depending tappet pins or studs S' of spurs Z of the approximate seed-wheel.

To the inner sides of the runners, at the rear ends thereof, are secured offset plates T', thereby forming spaces of suitable width between the said plates and the inner sides of
 50 the runners. The front ends of the said plates are extended obliquely to the runners, and are also inclined upwardly and rearwardly, as shown, thereby adapting the plates
 55 to open furrows in the soil as the machine advances. The seed-tubes have their lower ends arranged in the spaces between the plates T' and the runners, and the lower ends of said tubes are in line vertically with the axle when
 60 the runners are lowered, so that the seeds are dropped at points directly under the axle, thus rendering it convenient for the driver to adjust the machine when planting on the cross-rows.

U' represents downwardly-extending arms, one of which projects from the rear side of
 65 each hopper. The rear ends of the said arms are bent outward, and are arranged obliquely

with relation to the line of draft to form spindles V', on which are journaled circular covering-disks W'. Coiled springs X' are placed
 70 on the spindles V' and bear against the inner sides of the covering-disks. The said springs serve to normally keep the covering-disks at the outer ends of the spindles, but permit the
 75 said disks to slide inward on the spindles when they encounter obstructions, thereby avoiding the danger of the disks or their supporting-arms being broken. The extension-plates U of the rubbers are provided with
 80 horizontal slots or openings, through which the spurs of the rotating seed-disks successively project, so that the ends of the said spurs are arranged within the paths of the
 85 tappet rods or arms of the wheels N and O, and thereby when the machine is in motion the said tappet-rods serve to rotate the seed-plates and cause the latter to drop the seeds
 90 from the hoppers into the seed-tubes at suitable regular intervals of distance. As the seed-disks rotate the valves P' are operated by the studs S' and caused to drop the seeds
 95 from the seed-tubes into the furrows, which are opened by the runners and the offsets thereon, and said seeds are covered by the disks W', as will be readily understood.

It will be observed that the seed-disks are only actuated at the times when the tappet-arms of the wheels are in contact with the
 100 spurs of the seed-disks, and therefore by providing the wheels with the requisite number of tappets the hills may be planted any desired distance apart. When one of the
 105 tappet-arms is provided for each spoke, the hills or seeds of corn will be planted so closely together as to form drills.

X⁶ represents a rock-shaft which is journaled transversely on the longitudinal frame-bars B⁴, near the rear end thereof. From the
 110 said rock-shaft project rearward-extending arms Y⁶, and to one end of the said rock-shaft is attached a hand-lever Z'.

A² represents a pair of rods which connect the free ends of the arms Y⁶ to a crank-shaft B². The said crank-shaft is journaled in
 115 blocks C², which are provided with vertical arms D². The said arms fit in vertical guide-ways E², formed on the rear sides of the arms H⁴, and the cranks at the ends of the said
 120 shaft are journaled in the runners near the rear ends thereof, the said shaft serving thereby to connect the said runners.

From the foregoing description it will be readily understood that by means of the lever Z' the rock-shaft X⁶ may be turned so as
 125 to cause the rear ends of the runners, and consequently the seed-dropping mechanism attached to the said runners, to be raised or lowered. When raised, the spurs of the seed-wheels are out of the paths of the tappet-rods
 130 of the driving-wheels, and hence the planting mechanism is out of gear and the operation of the machine is suspended.

F² represents a longitudinal bar which is arranged under the center of the frame. At

a suitable distance from the front end of this bar depends a link G^2 , which is provided with a series of openings H^2 .

I^2 represents a plate which is secured to one side of the bar F^2 , near the rear end thereof, and K^2 represents an angle-bar which is pivoted at its vertex to the plate I^2 . At the rear end of the said angle-bar is formed a curved boss L^2 , which is provided on its under side with a shoulder M^2 .

N^2 represents a cam-link, which is pivoted to the center of the boss L^2 by means of a bolt O^2 . The said link is provided with a downward and rearward extending weight-arm P^2 , and has a tappet-arm R^2 formed at its upper end. On the front side of the said cam-link is formed a shoulder S^2 , which normally bears against the shoulder M^2 of the angle-bar, and thereby prevents the said cam-link from turning on its pivot in the direction indicated by the arrow in Fig. 3 without causing the angle-arm to turn on its pivotal bolt.

Rigidly secured to the center of the shaft or axle M is a cylindrical hub T^2 , from which projects a number of curved radial tappet-arms U^2 . The said arms are adapted to engage the upper end of the cam-link in succession, when they are revolved with the shaft by the forward motion of the machine, so as to cause the front free end of the angle-arm to move first upward and then downward in the path described by the curved dotted line 2 in Fig. 3.

V^2 represents a curved marker-arm, which has its front end pivoted to the depending link G^2 by means of a bolt, which engages one of the openings H^2 . The said openings adapt the front end of the marker-arm to be pivoted to the depending link at any desired vertical adjustment. The rear lower end of the curved marker-arm may be provided with a hoe, adapted to make a mark in the ground, and the said marker-arm is pivotally connected at a suitable distance from its free end to the angle-bar K^2 .

From the foregoing description it will be understood that when the front end of the angle-bar describes the movement before specified—that is, when the machine is in operation—the rear end of the marker-arm will be raised and lowered, and the machine is so arranged and its various parts are so timed that at the instant when the seeds are deposited from the seed-tubes into the hills of corn upon opposite sides of the machine the hoe of the marker-arm will be dropped to the ground in line with the said hills, making a distinct mark adjacent to tracks of the guiding-wheels, thereby serving to accurately determine the position of the hills as they are planted, and enabling the driver when the machine is operated on the return rows to cause the seeds to be deposited in check-rows at right angles entirely across the field.

In the event that the machine is backed the curved tappet-arms on the driving-shaft will engage the upper end of the cam-link, turn

the latter forward on its pivotal bolt, and thereby depress the rear end of the angle bar or lever, and consequently raise the engaging end of the marker-arm from the ground.

W^2 represents the driver's seat, which is supported on a bar X^2 , that has its lower front end bolted to the platform. To the rear end of the said bar X^2 is bolted the upper forward end of a downwardly-inclined rearwardly-extending arm Y^2 , the said arm having a vertical opening in its rear end.

Z^2 represents a bar which is provided at its inner end with a pair of bifurcated arms A^3 .

B^3 represents a T-shaped pivotal bolt, which has the ends of its transverse portion journaled in openings at the inner ends of arms A^3 , and has its vertical shank journaled in the opening at the rear end of arm Y^2 . To the outer end of the bar Z^2 is bolted an attachment C^3 , which is provided with a vertical sleeve D^3 . A pair of bifurcated bent arms E^3 have a vertical spindle F^3 at their upper ends, which serves to connect them together, and is swiveled in the sleeve D^3 , and between the lower ends of the said bifurcated bent arms is journaled a marking-wheel G^3 , the said wheel having its periphery beveled on opposite sides to a cutting-edge. The bent bifurcated arms of the spindle F^3 hold the marking-wheel in a position facing the center of their circle, which is the said spindle at the outer end of bar Z^2 , following it in any direction that it may be moved, supporting it, and being held in a perpendicular position by it and by the spindle F^3 . The bar Z^2 is adapted to be trailed rearward from the machine or to be moved or swung to either side of the machine, so as to cause the marker-wheel to run alongside the machine and at a suitable distance therefrom to make a furrow in the ground alongside and parallel with the rows of hills which are being planted to serve as a guide for the driver when the machine is operating on the return rows.

H^3 represents a transverse bar, which is arranged in between transverse guide-bars I^5 on the frame and is adapted to be moved longitudinally between the said guides and transversely on the frame, so that either end of the said bar may be projected from the machine. The front bar I^5 is much shorter than the rear bar I^5 . In the ends of the bar H^3 are horizontally-pivoted plates T^4 , which have right-angled arms U^4 and V^4 . The latter are turned up vertically and provided with V-shaped recesses. The function of this bar is to support the marker-bar Z^2 when the latter is arranged in either of the transverse positions hereinbefore described, and this it does by means of a guy rope or wire K^3 , which is provided at its rear end with a hook or other similar device to enable it to be attached to the bar Z^2 , and the front end thereof is knotted and adapted to engage either of the turned up ends of arm V^4 . The advantages of this marker will readily be seen. It obviates the necessity of the driver getting off from the

planter at the end of every row. To move or carry it to the opposite side and re-adjust it to mark for return rows, he draws the slide-bar, unhitches the guy-rope, the marker-wheel falls in rear of the planter, he draws the rope up on the other side, and hitches without stopping the team. The sharp beveled rim of the wheel makes a deeper and more distinct line-mark in the ground than a flat face.

When the slide-bar is moved to either limit of its play, after the guy rope or wire is disengaged from one of its pivoted plates, the arm V^4 of the latter strikes the proximate end of the rear bar I^5 , thereby turning said plate at right angles, so that its arm U^4 will be caused to engage the proximate end of the bar I^5 , and thereby limit the longitudinal movement of the slide-bar, as will be readily understood.

Through each runner, at a suitable distance from the front end thereof, extends a transverse shaft L^3 . The outer ends of the said shafts are bent rearward at an angle of about thirty-five degrees and are provided with depending fingers M^3 . The inner ends of the said shafts are provided with rock-arms N^3 , which straddle the upper edges of the runners.

P^3 represents angle-levers, which are fulcrumed at their vertexes on the shafts L^3 , and are arranged between the inner sides of the runners and the opposing sides of the rocking arms N^3 .

T^3 represents link-rods, which have their upper end bent at right angles to form arms or spindles that are journaled in openings in the beams B . The lower ends of the said link-arms are also bent at right angles, and are journaled in openings in the front ends of levers P^3 .

V^3 represents volute springs, which have their inner ends attached to the lower spindles of the link-rods and have their outer ends bearing on the rear ends of rock-arms N^3 , the function of these springs being to turn the shafts L^3 so as to cause the fingers M^3 to normally assume a vertical position. It will be observed by reference to Fig. 2 that the said fingers are arranged directly in advance of the wheels N O , and are thereby adapted to clear away stones, clods, and trash in advance of the wheels, thus enabling the said wheels to always keep to the earth, and consequently preventing them from moving faster or slower while passing over obstructions.

A^4 represents a transverse rock-shaft, which is journaled on the frame and has its ends bent to form arms C^7 , which are curved around the treads of the wheels and are adapted to be engaged by the studs or pins D^4 of the wheels when the rock-shaft is turned rearward, so as to check the rotation of the wheels and prevent the seeding mechanism from operating while the machine is being ranged at the ends of the rows.

E^4 represents a pedal with which the shaft A^4 is provided, and from one side of the said shaft projects an arm F^4 .

The hub of the loose wheel O has on its inner end a series of notches K^4 , which correspond in number with the tappet-arms P on said wheel and are arranged in radial lines midway between said tappet-arms.

The clutch member L^4 is feathered on the shaft or axle, and is adapted to engage the hub of wheel O , so as to lock the same to the shaft. M^4 is a hand-lever, which is fulcrumed in a plate N^4 at one of the rear corners of the frame, and has its lower end bifurcated and engaging the clutch.

O^4 represents a longitudinal shaft which is journaled in bearings on the outer side of one of the bars B^4 . At the rear end of said shaft is an arm P^4 , which is connected to the lever M^4 by a rod R^4 , and at the front end of said shaft is an arm S^4 , which is arranged at right angles to and in the path of the arm F^4 . At the ends of the rows the driver moves the lever Z' forward, raising the rear ends of the runners with the planting machinery and crowds the hand-lever M^4 outward, disengaging the clutch, leaving the wheels to turn independently of each other in order to turn around, and when turned and in line for planting he depresses the pedal E^4 , the arms C^4 engaging the pins D^4 and locking the wheels. The said pins, the clutch, and the tappet-arms P of the wheels are so adjusted that when both wheels are locked by the arms C^4 the tappet-arms P are in line on both wheels and in position for dropping corn. The planter moves forward, and when the hub is in line with the cross-rows the lever M^4 is drawn inward, the clutch enters, and the same movement of the lever M^4 tilts the brake off the wheels by means of the rod R^4 , depressing arm P^4 of shaft O^4 and elevating arm S^4 , which engages arm F^4 on shaft A^4 , turning the brake off from the wheels. It will be seen that the driver need not stop his team. After he has turned around and gets the planter-tongue over the return line he draws the lever Z' toward him lowering the planting machinery, depressing the pedal, his hand on lever M^4 , and when the wheel is in line with the marks of cross-rows he draws the lever, the wheels are loosened from the brace, and both are locked to the axle and both in line in the cross-rows. It will be seen that there are a series of five pivots and points embraced in this movement to raise and lower the planting machinery by means of the hand-lever Z' .

Having thus described my invention, I claim—

1. In a corn-planter, the combination of the hopper having a perforation D' in its bottom plate, the seed-plate mounted to revolve under the bottom of the hopper and having radially-extending spurs or tappets, a shaft mounted in bearings of the hopper, and the ejector-arms and operating-arms extending from said shaft, said ejector-arms being located in the path of the spurs of the seed-wheel, substantially as specified.

2. The combination, in a planter, of the

hopper having the bottom opening D' , the seed-plate arranged under the same and having the seed cups or openings, said plate being provided with the projecting spurs, the plate arranged under the seed-plates, and the shaft journaled on the bottom plate of the hopper and having the arms K' , adapted to sweep through the opening D' , and having the arms H' , adapted to be engaged by the spurs or tappets of the seed-plate, substantially as described.

3. The combination, in a planter, of the hopper having the abutment or wall W at one side, and having the bottom portion projecting beyond said abutment or wall and provided with the opening D' , the revolving seed-plate arranged under the bottom of the hopper and having the seed cups or openings adapted to successively register with the openings D' , the shaft journaled on the projecting portion of the bottom of the hopper and having the ejector-arms K' and operating-arms H' , and means, substantially as set forth, to partly rotate said shaft, substantially as described.

4. The combination, in a planter, of the hopper, the seed-plate arranged under the same, adapted to revolve, and having the seed cups or openings and the tappets B' , the shaft H' , having the ejector-arms K' , adapted to move through the seed cups or openings in succession as the seed-plate rotates, the said shaft being further provided with the tappet-arms I' , adapted to engage the tappets B' in succession, whereby said shaft is operated by the rotation of the seed-plate, substantially as described.

5. The combination, in a check-row planter, of the revolving driving-shaft having the tappet-arms U^2 , the marker-arm V^2 , the pivoted lever or bar K^2 , connected to the marker-arm, and the cam-link N^2 , pivoted to the rear end of the said lever or bar, adapted to turn thereon in one direction, and arranged in the path of the tappet-arms U^2 , substantially as described.

6. The combination, in a check-row planter, of the revolving driving-shaft having the tappet-arms U^2 , the marker-arm V^2 , the pivoted lever or bar K^2 , connected to the said marker-arm, and the pivoted cam-link at the rear end of said lever or bar arranged in the path of the tappet-arm and adapted to turn on its pivot in one direction, said cam-link having the depending weight-arm P^2 , substantially as described.

7. The combination, in a check-row planter, of the revolving driving-shaft having the tappet-arm U^2 , the marker-arm V^2 , the angle bar or lever K^2 , pivoted to a suitable support and connected to the marker-arm, said angle bar or lever having the shoulder or offset M^2 on its under side at its rear end, and the cam-link N^2 , pivoted to the rear end of said angle bar or lever, said cam-link being arranged in the path of the tappet-arms and

having the offsets or shoulders S^2 on its rear side, adapted to engage the offsets or shoulder M^2 , for the purpose set forth, and being further provided with the weight-arm P^2 , substantially as described.

8. In a seed-planter, the combination, with the frame having the arched front cross-bar, of the front guiding-truck having the vertical crank-shaft, and the tongue having the hound-frame connected with the crank of said shaft, substantially as set forth.

9. The combination, in a planter, of the frame having the supporting-wheels and provided at its front end with the centrally-arched cross-bar C , the vertical clamp-bolt having its upper end pivoted in the center of the said cross-bar and provided with the crank, the trailing guiding-wheels secured to the lower end of said bolt, the tongue connected to the crank, and the runners or furrow-openers having their front ends pivoted to bars B , attached to the ends of bars C , for the purpose set forth, substantially as described.

10. The combination, in a planter, of the main frame, the marker-bar connected thereto and adapted to be swung to either side thereof, and having the trailing wheel, the bar H^3 , arranged to slide transversely upon the main frame and adapted to be projected beyond either of its sides, and connections, substantially as set forth, between said bar H^3 and the marker-bar, substantially as described.

11. The combination of the transverse guide-bars I^5 I^5 , of unequal length, the transversely-sliding bar H^3 , and the angle-plates, pivoted at the ends of the latter and forming stops to engage the shorter guide-bar, substantially as set forth.

12. The combination of the guide-bars of unequal length, the bar arranged to slide transversely between the same, the angle-plates pivoted at the ends of the transversely-sliding bar and forming stops to abut against the ends of the shorter guide-bar, the notched lugs upon the upper sides of said angle-plates, the marker having the trailing wheel, and a rope attached to said marker and adapted to be connected with the notched lug of the angle-plate at either end of the transversely-sliding bar, substantially as set forth.

13. The combination, with the supporting-wheels having concentric rings, the outer one of which is provided with perforations in alignment with the wheel-spokes, of the tappet-rods having bifurcated inner ends catching over and engaging the inner concentric rings, and screw-threaded outer ends extending through the perforations in the outer concentric rings and having screw-threaded ends and nuts thereon, substantially as set forth.

14. The combination, in a corn-planter, with the driving-wheels having the tappets, the hoppers, the revoluble seed-plates having the spurs to engage the tappets, and the depending studs S' , of the seed-spouts and the spring-

pressed valves therein adapted to be engaged and operated by the studs S' , substantially as described.

15. The combination of the driving-wheels having tappets, the seed-wheels having spurs engaged by said tappets, the ejectors mounted upon shafts having operating-arms that lie in the path of the spurs of the seed-wheels, and the spring-pressed valves located in the seed-spouts and in the path of said spurs, the parts being timed to co-operate substantially as set forth.

16. The combination, in a planter, of the frame having the guides I^5 , the slide-bar H^3 , arranged between said guides, and the pivoted plates in the ends of said bar, substantially as described.

17. The combination, in a planter, of the frame having the guides I^5 , the slide-bar arranged between said guides, and the pivoted plates in the ends of said bar, said plate having the right-angled arms U^4 V^4 , and the latter being upturned and provided with the notches, substantially as described.

18. In a planter, the main frame, the marker-bar Z^2 , having one end pivotally connected to the frame so as to turn in a horizontal and vertical plane, and the marker-wheel G^3 , having a beveled rim and connected to the marker-bar by a shank swiveled vertically in the latter, as set forth.

19. In a planter, the main frame, the marker-bar Z^2 , having one end pivotally connected to the frame so as to turn in a horizontal and vertical plane, the marker-wheel G^3 , having

a beveled rim and mounted in a shank swiveled on the outer end of the marker-bar, the transversely-movable bar H^3 , adapted to be projected beyond either side of the frame, and connections, as a chain or cord, between the outer end of the bar H^3 and the marker-bar, as set forth.

20. The frame having the arched cross-bar C , provided with offset D , the cranked vertical pivotal bolt I , having its bearing in the offset D , the tongue-hounds F , mounted on the bolt I , the lower end of said bolt being curved rearwardly, the axle K , secured in the lower curved end of the bolt, and the guiding-wheels L , carried by the axle, as set forth.

21. In a planter, the rock-shaft X^6 , the arms V^6 , projecting therefrom, a hand-lever Z' for the rock-shaft, the rods A^2 , connected to the arms V^6 , the crank-shaft B^2 , having its cranks journaled in the runners, and the blocks C^2 , having arms that fit in guideways E^2 , said blocks serving as journal-blocks for the crank-shaft B^2 , as set forth.

22. In a planter, the transverse shaft M , or axle carrying the wheels N O , the bars B^4 , the curved arms H^4 , secured thereto and having the curved slots H^5 , through which the shaft M passes, as set forth.

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

HENRY J. WAGNER.

Witnesses:

H. M. HALCOMB,

L. C. MAST.