

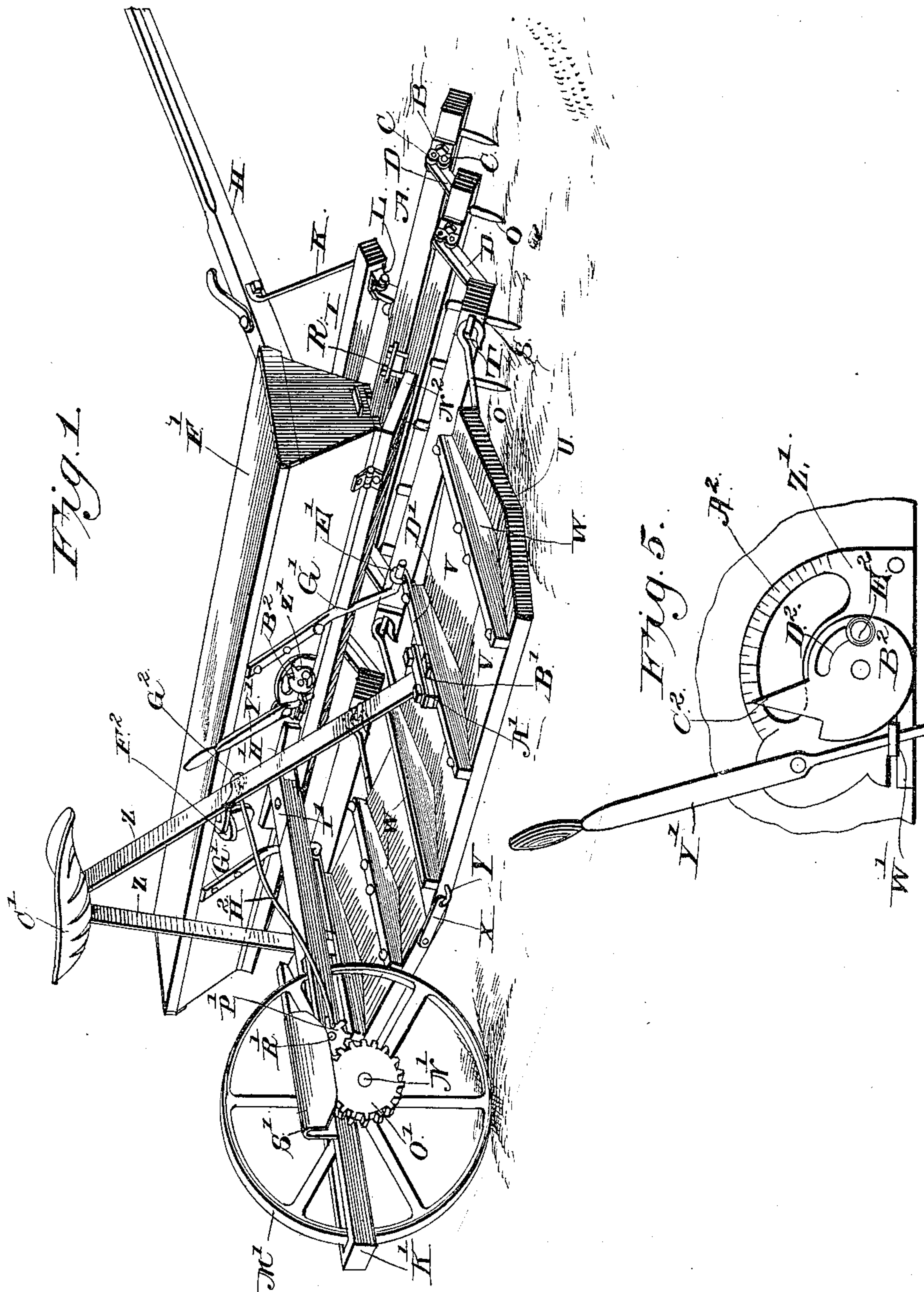
(No Model.)

2 Sheets—Sheet 1.

J. M. POORE.
HARROW, SEEDER, AND PLANTER.

No. 405,797.

Patented June 25, 1889.



Witnesses

M. C. Fowler
J. W. Garner

Inventor

James M. Poore

By *His* Attorneys

C. A. Snowdon

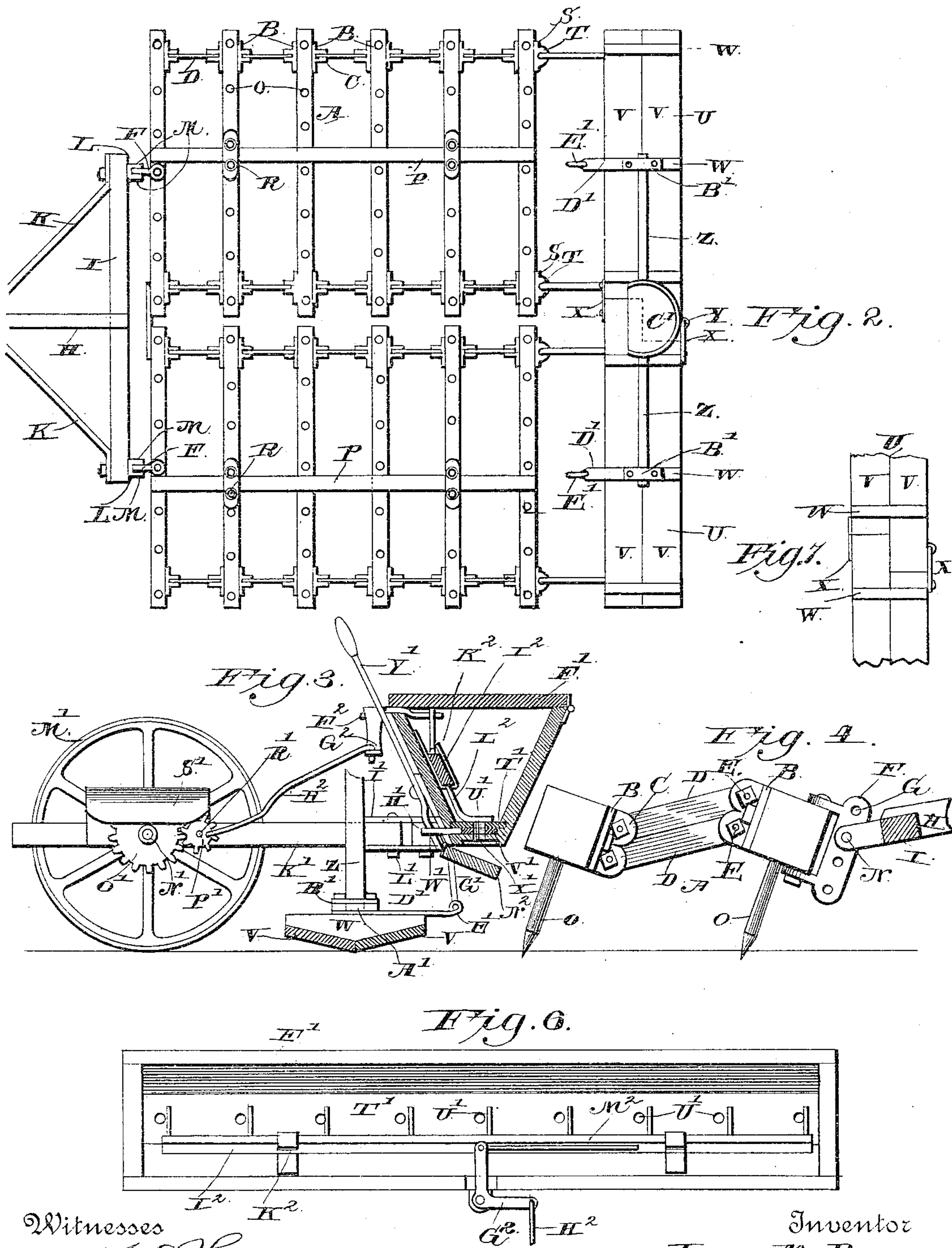
(No Model.)

2 Sheets—Sheet 2.

J. M. POORE.
HARROW, SEEDER, AND PLANTER.

No. 405,797.

Patented June 25, 1889.



Witnesses

M. S. Fowler
J. Warner

Inventor

James M. Poore

By His Attorneys

C. A. Snow & Co.

UNITED STATES PATENT OFFICE.

JAMES M. POORE, OF SPRING VALLEY, MINNESOTA.

HARROW, SEEDER, AND PLANTER.

SPECIFICATION forming part of Letters Patent No. 405,797, dated June 25, 1889.

Application filed November 30, 1888. Serial No. 292,302. (No model.)

To all whom it may concern:

Be it known that I, JAMES M. POORE, a citizen of the United States, residing at Spring Valley, in the county of Fillmore and State of Minnesota, have invented a new and useful Improvement in a Combined Harrow, Seeder, and Smoother, of which the following is a specification.

My invention relates to an improvement in a combined harrow, seeder, and smoother; 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.

In the accompanying drawings, Figure 1 is a perspective view of my improved harrow, smoother, and seeder. Fig. 2 is a top plan view showing the smoother attached to a harrow, the seeder being omitted. Fig. 3 is a transverse sectional view of the seeder and smoother. Fig. 4 is a detailed view of the harrow. Fig. 5 is a detailed elevation of the seed-regulating device. Fig. 6 is a detailed top plan view of the seeder. Fig. 7 is a detail view showing the connection between the smoother-sections.

The harrow comprises a pair of sections arranged side by side, each section having a suitable number of transverse parallel beams A. The said beams are provided on their front and rear sides near their ends with plates B, which are bolted thereto, the said plates being each provided with two pairs of ears C, arranged one above the other, as shown. Parallel links D have their ends pivoted between the pairs of ears by means of pivotal bolts E, and thereby the harrow-beams are connected together, and are rendered capable of independent vertical motion to enable the harrow to conform to inequalities of the soil. The front harrow-beam of each section is provided at its center with a clevis F. The said clevises are provided with vertical series of adjusting-openings G.

H represents the tongue or pole, which has a transverse draw-bar I at its rear end, strengthened by brace-rods K. Bolted on the rear side of the draft-bar, near the ends thereof, are plates L, having rearward-extending pairs of lugs M, which are adapted to engage the clevises F, and are pivotally connected thereto by means of bolts N, which

are inserted through openings in the said ears and through either of the adjusting-openings in the clevises. When the lugs M are coupled to the upper ends of the clevises, the harrow-beams will be caused to tilt forward to the position illustrated in Fig. 4 when in operation, and thereby cause the harrow-teeth O to incline rearward; but when the lugs N are coupled to the lower ends of the clevises the tendency of the draft will be to incline the harrow-teeth forward.

If it is desired to render the harrow-sections inflexible and to cause the teeth to work in a perpendicular position, this may be accomplished by placing rigid bars P longitudinally on the upper side of the harrow-beams and inserting them through keepers or straps R, with which certain of the harrow-beams are provided, as shown in Fig. 2.

On the rear harrow-beams are bolted plates S, each of which has a rearward-extending ear T, provided with a vertical opening adapted to engage a hook-link attached to the front side of one of the smoother-sections U. The said smoother-sections are each composed of a pair of boards V, arranged at an obtuse angle, and transverse cleats W, which are bolted on the said boards and serve to secure them together. The inner ends of the smoother-sections are rabbeted, and thereby caused to overlap each other, and are connected together by links X, as shown, said links having their ends loosely attached to the said sections by bolts or other devices Y, and thereby rendering the smoother somewhat flexible.

It will be understood from the foregoing description that when the hooks of the smoother are attached to the harrow-section the smoother will be dragged in rear of the harrow, as shown in Fig. 2.

Z represents a pair of downward-converging seat-bars, which have their lower ends secured by bolts A' and plates B' on the upper sides of the central cleats of the smoother-sections, and the said seat-bars support the seat C' for the driver. By this arrangement the weight of the driver must be sustained by the smoother, and thereby the efficiency of the latter is increased. The central cleat of each smoother-section has at its front end a bar D', provided with an eye E'.

F' represents a hopper, which is provided

on its rear side with a pair of downwardly-extending arms G' , the lower ends of which are bent at right angles and caused to engage the eyes E' , and thereby pivotally connect the smoother to the hopper. On the rear side of the latter at its center is a rearward-projecting bracket H' , having a pair of plates I' bolted on its upper and lower sides, and between the rear ends of the said plates is pivotally connected the front end of a trailing bar K' by means of a bolt L' . A wheel M' is arranged in a longitudinal opening in the rear end of the said bar and is secured to a shaft N' , mounted in suitable bearings, (not shown,) such as will be readily understood, and to the outer end of the said shaft is rigidly secured a spur-wheel O' , which engages a crank-pin P' , the latter being journaled on a spindle R' , that projects from the bar K' . A suitable shield S' is secured to the said bar and arranged over the gears O' and P' to prevent clods and earth which may adhere to the wheel M' from dropping upon the said gears.

It will be understood by reference to Figs. 1 and 3 that the arms G' , the wheel M' , and bar K' serve to support the hopper, and that the weight of the latter is borne by the smoother in addition to the weight of the driver. The bottom of the hopper and a plate or false bottom T' , with which the same is provided, have vertically-aligned discharge-openings U' at suitable intervals, and between the bottom of the hopper and the false bottom T' is arranged a cut-off or regulating-slide V' , having openings X' , which may be arranged coincident with the openings U' , or caused to entirely or partly close the latter, in order to regulate the quantity of seed discharged from the hopper on a given area of land. The said slide V' has an arm W' , which projects through a suitable slot in the rear side of the hopper, and the said arm has an opening which is engaged by the lower end of a lever Y' , that is fulcrumed on the rear side of the hopper within convenient reach of the driver.

A plate Z' is bolted on the rear side of the hopper and has a pivotal stud or bolt on which the lever Y' is fulcrumed, as shown, and the said plate is provided with a quadrant-shaped graduated scale A' .

B^2 represents an eccentric, which is journaled on a stud that projects from plate Z' , has an arm or pointer C^2 , adapted to play on the graduated scale, and is further provided with a slot D^2 , which is concentric with the pivot. A set-screw E^2 works in the slot D^2 and engages a threaded opening in plate Z' , and is thereby adapted to clamp the eccentric or cam to the said plate with its pointer or index arranged opposite any desired figure on the graduated scale. The said cam or eccentric is arranged in such proximity to the lever Y' that its eccentric edge forms a stop to limit the throw or movement of said lever, and consequently the adjustment of the slide V' ; hence by setting the hand of the cam at

any desired predetermined point and by moving the hand-lever Y' until it comes in contact with said eccentric or cam the planting apparatus may be so adjusted as to cause any desired quantity of seeds to be discharged therefrom over a given area of land.

Fulcrumed on a bracket F^2 , that projects rearward from the center of the hopper, is a bell-crank lever G^2 , the outer end of which is connected by a pitman H^2 to a crank-pin on pinion R' , and hence when the machine is in motion the rotation of the said pinion will impart reciprocating motion to the pitman, and the latter will impart oscillating motion to the bell-crank lever.

I^2 represents a slide bar arranged longitudinally within the rear wall of the hopper and guided in a pair or any suitable number of keepers K^2 . From the lower side of the said slide-bar depend a number of stirring-arms L^2 , which correspond in number with the discharge-openings of the hopper, and are adapted to move backward and forward over the same, and thereby cause the grain in the hopper to be discharged through the said openings. A pitman or link M^2 connects the said slide-bar to the inner arm of bell-crank lever G^2 , and thereby imparts reciprocating motion to the slide-bar, as will be readily understood.

Arranged under the bottom of the hopper at a slight distance below the same is a forward and downward inclined spreading-board N^2 , on which the seeds drop before reaching the ground, the function of the said board being to separate and spread the seeds, and thereby prevent them from dropping to the ground in groups and serving to distribute the seeds evenly on the soil. The harrow when coupled to the smoother, as shown in Fig. 1, serves to stir the soil, the planter drops the seeds thereon, and the smoother covers the seeds and rubs the surface of the soil smooth, thereby compacting the same, and hence tending to prevent the too rapid evaporation of the moisture in the soil, and consequently assisting in the speedy germination of the seeds.

Having thus described my invention, I claim—

1. The combination of the harrow-beams having the ears C attached to and extending from their front and rear sides, near the ends, in pairs one above the other, with the links D , having their ends pivoted to the said ears, said links being arranged in parallel pairs, connecting the upper and lower ends of the beams, substantially as set forth.

2. The combination, with the harrow-beams and the links arranged in pairs, as described, and coupling or connecting said beams flexibly together, of the longitudinally-arranged rigid stiffening-bars and the keepers secured on the harrow-beams and receiving said stiffening-bars, substantially as set forth.

3. The combination of the smoother having forwardly-extending arms D' , provided with

eyes E', the hopper having the seed-stirring mechanism and provided with depending arms G', having inturned ends engaging the eyes E', the bar K', bolted between plates H',
5 extending rearwardly from the hopper, the trailing wheel journaled in said bar, and mechanism for transmitting motion from said trailing wheel to the seed mechanism, substantially as set forth.

10 4. The combination of the harrow, the smoother connected to the rear end of the same and having plates D', provided with eyes E', the hopper having downwardly-extending arms provided with inturned ends
15 engaging the eyes E', and a bar extending rearwardly from the hopper, and the trailing wheel journaled to said bar, substantially as and for the purpose set forth.

20 5. The combination of the smoother having the arms D', with eyes E', the hopper having the seed-stirring mechanism and the depending arms G', provided with hooks at their lower ends, the bar K', extending rearward from the hopper, the supporting-wheel jour-
25 naled in said bar, and the gears and devices, substantially as set forth, connecting said wheels to the seed-stirring mechanism, the harrow arranged in advance of the smoother, and the hooked rods connecting the latter
30 with the rear harrow-beam, substantially as described.

6. The hopper having the discharge-openings and the cut-off plate with openings X' and arm W', in combination with a cam B², forming a stop for said arm, and devices to
35 secure the cam at any desired adjustment, substantially as described.

7. The hopper having the discharge-openings and the cut-off plate with openings X' and arm W', in combination with the cam or
40 eccentric forming a stop for the said arm and provided with the hand or pointer, and the graduated scale, substantially as described.

8. The smoother-sections composed of a pair of boards V, arranged at an obtuse angle, and transverse cleats bolted on the said
45 boards and serving to hold them together, as set forth.

9. The smoother composed of sections U, having their inner meeting ends rabbeted,
50 and thereby caused to overlap, and the links X, connecting these sections at the point where they overlap, as set forth.

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

JAMES M. POORE.

Witnesses:

A. R. HOLMON,
J. H. CLARK.