(No Model.) 4 Sheets—Sheet 1.

W. A. VAN BRUNT.

GRAIN DRILL.

No. 490,728. Patented Jan. 31, 1893.

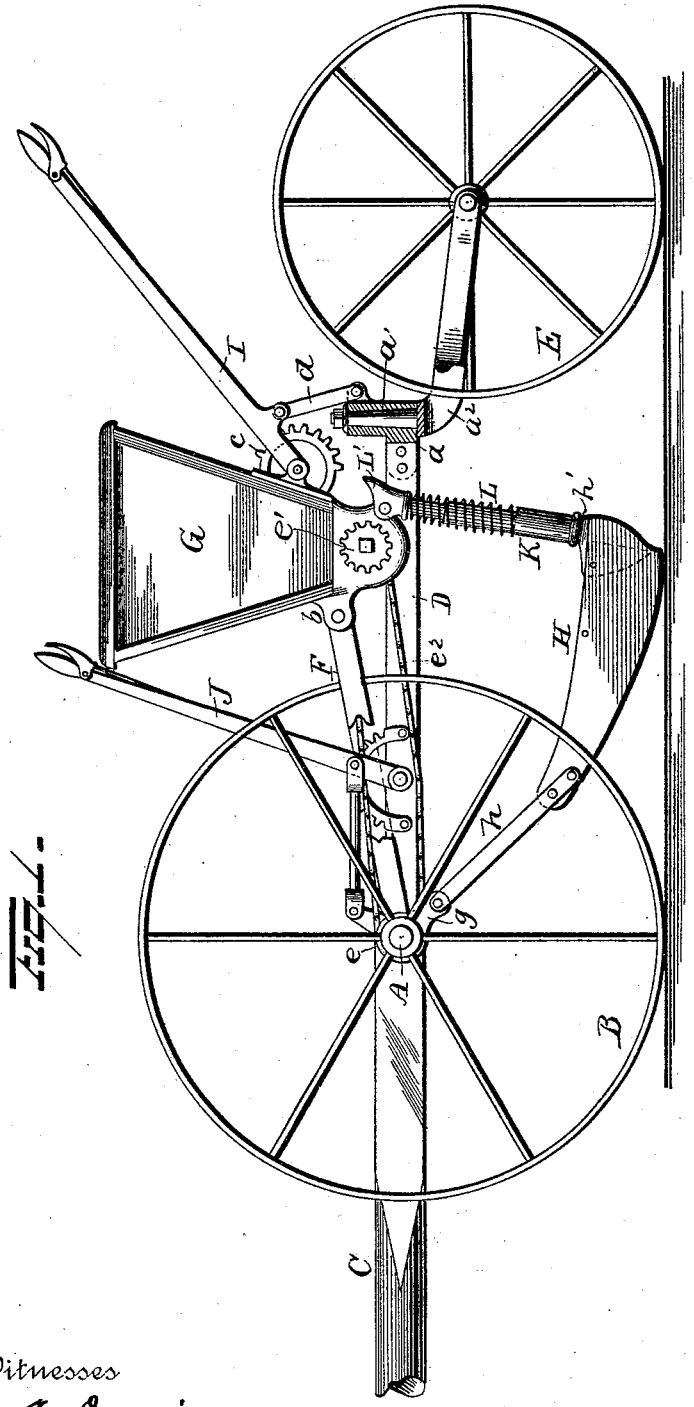

Fig. 1.

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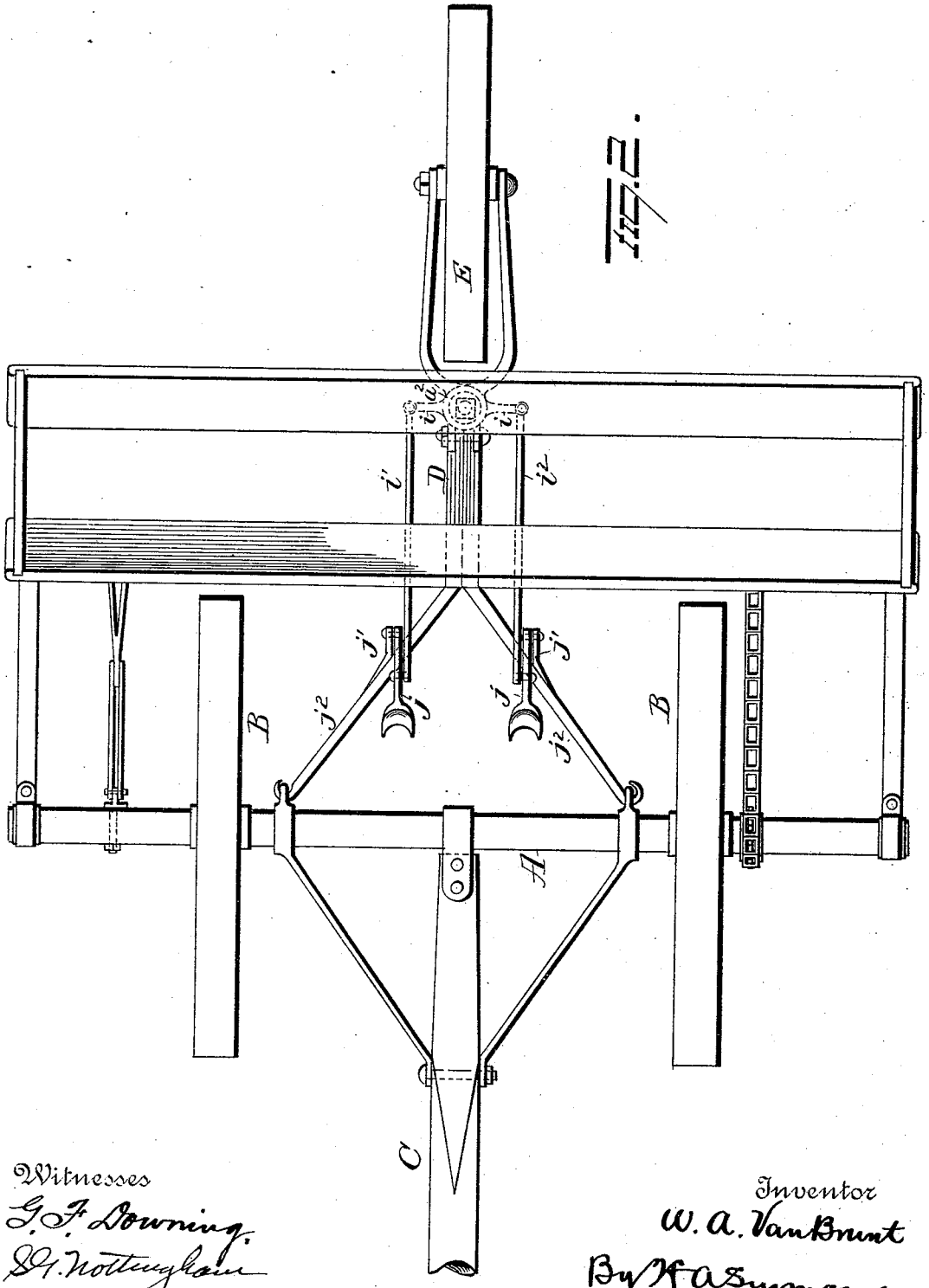

Fig. 2.

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Fig. 4.

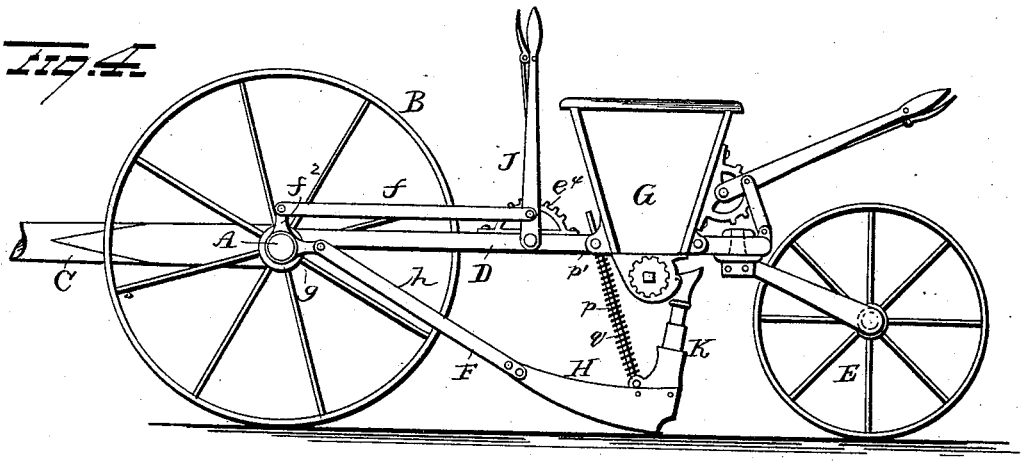
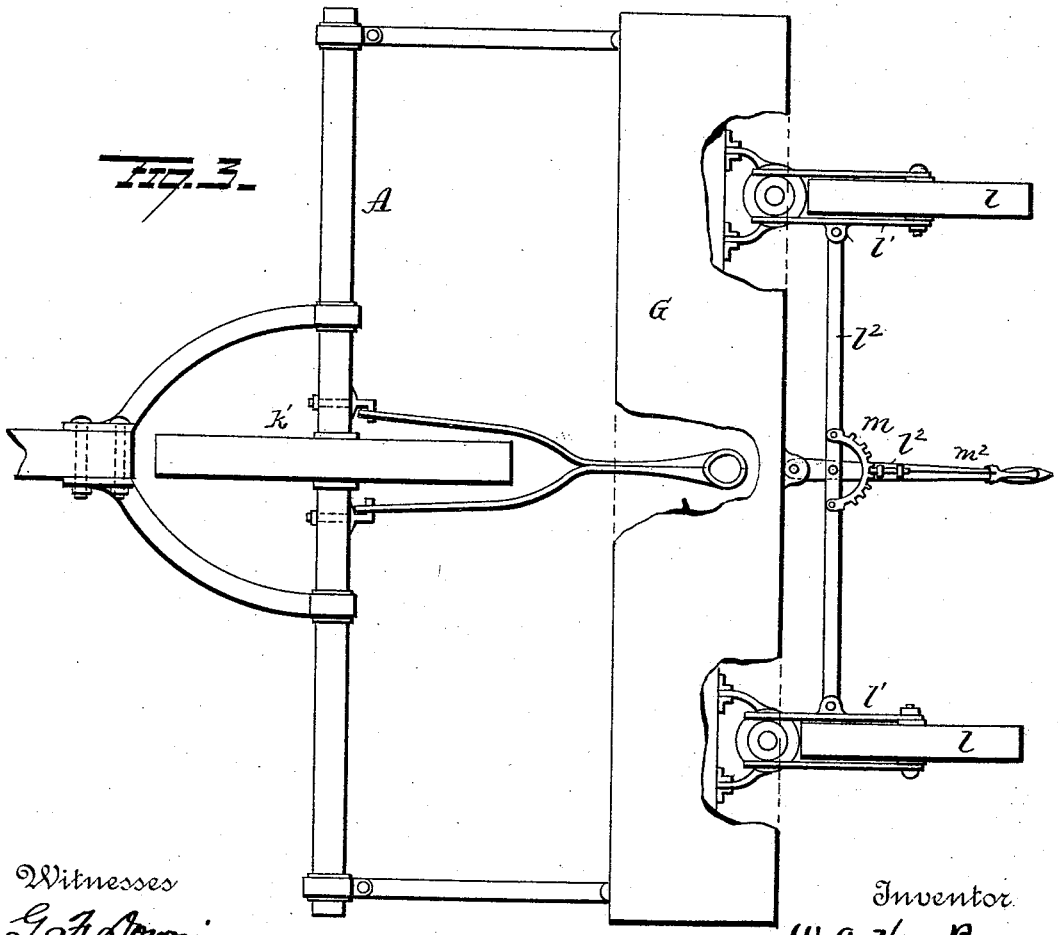


Fig. 3.



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W. A. VAN BRUNT.

GRAIN DRILL.

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Fig. 5.

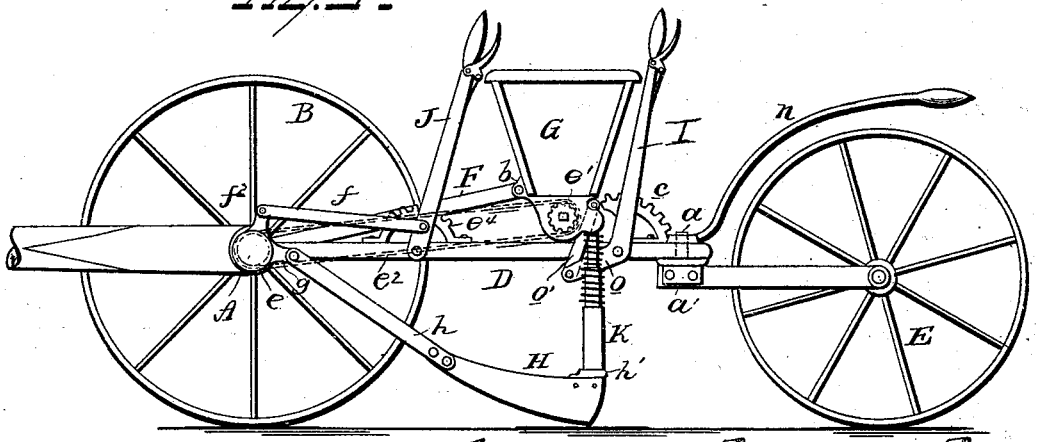


Fig. 9.

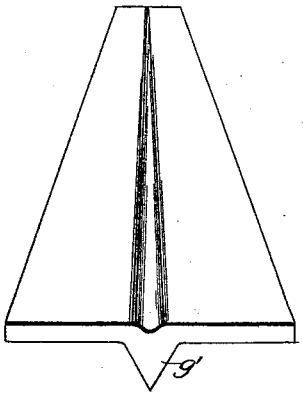


Fig. 10.

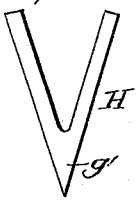


Fig. 6.

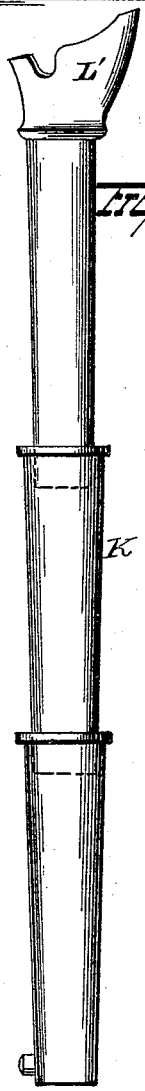


Fig. 7.

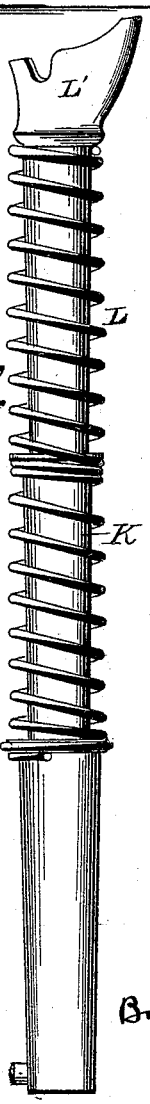
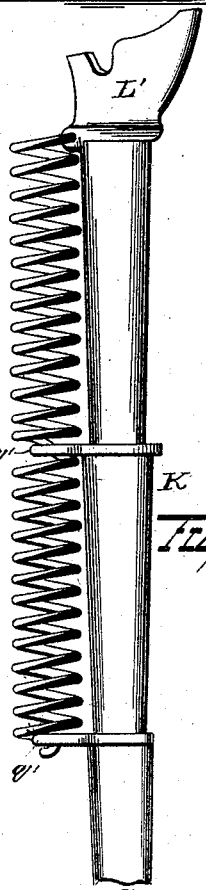


Fig. 8.



Witnesses
G. F. Downing.
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UNITED STATES PATENT OFFICE.

WILLARD A. VAN BRUNT, OF HORICON, WISCONSIN.

GRAIN-DRILL.

SPECIFICATION forming part of Letters Patent No. 490,728, dated January 31, 1893.

Application filed August 2, 1892. Serial No. 441,941. (No model.)

To all whom it may concern:

Be it known that I, WILLARD A. VAN BRUNT, residing at Horicon, in the county of Dodge and State of Wisconsin, have invented certain new and useful Improvements in Grain-Drills; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in grain drills,—its object being to construct the machine in such manner as to avoid any tendency of the machine sagging down in the center as is the case with machines where the ground wheels are at the ends of the machine.

A further object is to so construct the machine that it will be better adapted to uneven ground, than similar machines now in use of which I am aware.

A further object is to construct the machine in such manner that the horses will be relieved of all weight of the machine upon their necks.

A further object is to provide simple and efficient means for guiding the machine.

A further object is to provide simple devices for raising and lowering the front ends of the shoes.

A further object is to construct the grain tubes in such manner that they will also serve as pressure springs.

A further object is to produce a shoe for a grain drill, which shall be simple in construction as well as substantial, and which shall be effectual in the performance of its functions and which shall be durable.

With these objects in view the invention consists in certain novel features of construction and combinations and arrangements of parts as hereinafter set forth and pointed out in the claims.

In the accompanying drawings: Figure 1 is a side elevation partly in section of my improved drill. Fig. 2 is a plan view showing the caster wheel and foot operated devices for manipulating said caster wheel. Fig. 3 is a plan view showing a single main or carrying wheel, two caster wheels and hand operated mechanism for shifting said castor wheel. Figs. 4 and 5 are views illustrating certain modifications. Figs. 6 and 7 are views illustrating the feed tube and pressure spring. Fig. 8 is a view of a modification of the feed tube. Fig. 9 is a view of the blank from which the shoes are made. Fig. 10 is an end view of a shoe.

A represents the axle of the machine which supports, at points intermediate of its ends, the main carrying wheels B, as clearly shown in Fig. 2. The tongue C of the machine is pivotally connected with the axle, and extending rearwardly from the axle, is the reach D. To the rear end of the reach a bracket a is secured and adapted to receive the pintle a' which projects from the supporting bracket a^2 of a caster wheel E. Braces F are connected at their forward ends with the axle A and at their rear ends are secured to brackets b fixed to a seed box G. The seed box G has secured to its rear face a toothed segment c with which the latch bar of a pivoted lever I is adapted to engage. A link d is pivotally connected at one end with the lever at a point in proximity to its pivoted end and at the other end said link is pivotally connected to the bracket a or to the rear end of the reach. Thus it will be seen that the seed box G will be supported by the main axle A and the caster wheel E, through the medium of the intermediate connections described, and that by means of the lever I the rear end of the machine may be readily elevated or tilted.

A sprocket wheel e is carried by the hub of one of the carrying wheels and conveys motion to the feed mechanism e' in the hopper, through the medium of a sprocket chain e^2. A lever J is pivotally connected to the reach D at a point forwardly of the seed box G and carries a latch bar adapted to engage a toothed segment e^4 secured to the reach. A rod f is pivotally connected at one end to the lever J at a point in proximity to the segment e^4,—the other end of said rod being pivotally connected with an arm f^2 projecting upwardly from the axle A. A number of arms g project from the axle A and are adapted to project downwardly and rearwardly therefrom, to each of which arms a draw bar h is connected, the other ends of said draw bars being connected with the forward ends of a series of shoes H, and communicating with the rear ends of said shoes are feed tubes K, the

upper ends of which latter are connected with the feed cups of the hopper at the discharge outlet thereof.

By constructing and arranging the devices for elevating the forward ends of the shoes H as above described, it will be seen that said forward ends of the shoes can be elevated by operating the lever J without disturbing the horizontal position of the seed box or hopper or in any way affecting the same.

Shoes of the kind employed by me have usually been made of two plates welded together at their lower edges. With such prior devices, the meeting edges of the plates or where said plates are welded together, have been very slight. That is to say the amount of surface of one plate exposed to the other plate where said plates are welded together have been very small, and thus the solidity and durability of the shoes have been greatly impaired. To avoid this great defect I construct the shoe of a single piece of metal with a thickened portion g' in proximity to the cutting edge, said thickened portion tapering from the rear end toward the forward end of the shoe.

The shoes may be made by taking a plate or blank of steel smaller at one end than at the other and providing said plate or blank at its center with a V-shaped enlargement or thickened portion g'. The plate or blank is then folded at the center to produce the shoe, which, in cross section or end elevation, is V-shaped, as shown in Fig. 10.

The feed tubes K which convey the seed from the box or hopper G are adapted at their lower ends to pass through a bracket or plate h' carried by the rear ends of the shoes, and deliver the grain into the furrows made by the shoes. Each feed tube is made in sections as shown in Fig. 6, and said sections are made telescoping. Encircling the upper sections of each tube is a coiled spring L, the lower end being adapted to rest on the upper end of the lower section of the tube and the upper end of said spring being adapted to bear against the mouth L′ of the tube. The lower section of each tube may be secured in the bracket h' or otherwise fastened to the shoe. From this construction it will be seen that the tubes K with the springs L perform two functions,—viz. to conduct the grain from the seed hopper to the furrow in the ground and also as yielding devices for the shoes. They impart a yielding pressure to the shoes from the weight of the machine as applied by the lever I. The yielding or spring tube may be attached directly to the shoe at its lower end and to the feed mechanism at its upper end, or to intermediate connections between the spring and shoe, and spring and feed.

Instead of employing the combined feed tube and pressure device as above described, the telescoping tube may be employed as shown in Fig. 4, and a rod p may be attached at its lower end to each shoe, said rods passing freely through a flange or projection p', on the hopper, a coiled spring q encircling said rod p, said spring bearing at its respective ends against the shoe and flange or projection p'. The spring q may be coiled to hold the tube telescoped together when no pressure is exerted to draw them apart or the spring may be coiled to hold the sections apart and remain in that position until power is exerted to close them up.

Instead of arranging the pressure spring and feed tube as above explained, the arrangement shown in Fig. 8 may be adopted. In this form the pressure spring q is located to one side of the tube K, and connected with the sections of the tube by means of loops q'.

In the operation of grain drills it often occurs that the team drifts from the course a little or the machine does not closely follow the line taken by the team, thus producing laps or balks and hence producing uneven distribution of the seed and thereby affecting the yield. To remedy these defects I provide the devices now to be described, whereby any slight variation can be easily and quickly made without changing the general course of the team, my improvements for this purpose being especially advantageous on sides of hills where there is a strong tendency to drift.

The supporting bracket a^2 of the caster wheel E is provided with laterally projecting arms or ears i, to each of which, one end of a rod i' is attached,—the other or forward ends of said rods being pivotally connected with foot levers j, which latter are pivotally connected to brackets j' secured to the forked portions j^2 of the reach D. By these means the driver on the machine can readily keep the drill in its proper course, and his hands will be left free to guide the team, and manipulate the operating levers to tilt the machine or elevate the forward ends of the shoes.

In lieu of the arrangement of the machine as above explained, a single main carrying wheel may be provided and mounted on the axle A centrally between its ends as shown at k', Fig. 3. In this form of the invention I have illustrated two caster wheels l, l, the supporting brackets l' of which are connected by a rod or bar l^2 pivotally connected at its ends to said supporting brackets. At a point between its ends the rod or bar l^2 is provided with a toothed segment m, with which the latch bar l^2 of the pivoted operating lever m^2 is adapted to engage. It will be seen that by manipulating the operating lever m^2, the caster wheels l, l, will be shifted in unison and the machine thus made to keep its proper course. Again the pintle a projecting from the bracket a' of the caster wheel E, may have an operating lever n secured thereto and projected rearwardly over the caster wheel, as shown in Fig. 5. In the form of the invention shown in Fig. 5, the toothed segment c is secured to the reach instead of to the seed box as shown in Figs. 1 and 4. In Fig. 5 the lever I is shown pivotally connected to the reach D and as having a downwardly and forwardly

projecting arm *o*. To the forward end of the arm *o*, a bar *o'* is attached, and the upper end of said bar *o'* is attached to the hopper.

In the form of the invention shown in Fig. 4, the seed hopper is located directly on the reach D.

From the construction of the machine as above set forth it will be seen that it will be prevented from sagging at the center and is well adapted to run over uneven ground. These ends are accomplished by bringing the carrying wheels within the machine (as above alluded to) so that the span between the wheels wlll be equal to that portion of the machine extending beyond or outside of the wheels. Thus it will be seen that the weight of the machine will be averaged directly over the wheels and that the span between the wheels is one half that of other machines of which I am aware of equal width, hence only one half of the variation owing to uneven ground.

Various slight changes might be made in the details of construction of my invention without departing from the spirit thereof or limiting its scope, hence I do not wish to limit myself to the precise details of construction herein set forth, but,

Having fully described my invention what I claim as new and desire to secure by Letters Patent is:

1. In a grain drill, the combination with an axle, carrying wheels mounted on said axle, a reach and a caster wheel carried by the rear end of said reach, of a seed box, braces extending from the seed box to the axle, and devices for elevating the rear end of the machine, connecting said seed box with the rear end of the reach, substantially as set forth.

2. In a grain drill, the combination with an axle, carrying wheels mounted on said axle, a reach and a caster wheel carried by the rear end of the reach, of a seed box, braces extending from the seed box to the axle, a toothed segment secured to the seed box, a pivoted lever having a locking bar to engage said segment, and a link connecting said pivoted lever with the bracket which supports the caster wheel, substantially as set forth.

3. In a grain drill, the combination with an axle, and carrying wheels, of a seed hopper, a caster wheel for supporting the rear end of the machine, and a lifting lever connected with the bracket which supports said caster wheel, and a toothed segment for locking said lever in position, substantially as set forth.

4. In a grain drill, the combination with an axle, carrying wheels mounted on said axle, a reach and a seed box or hopper, and a series of shoes, of a lever pivoted to the reach, a segment for retaining said lever in a locked position, an arm projecting from the axle, a rod connecting said arm with the pivoted lever, arms projecting downwardly and rearwardly from said axle, and draw bars connecting said last-mentioned arms with the shoes, substantially as set forth.

5. The combination with an oscillatory axle having arms thereon, and wheels in which the axle is supported, of a shoe, a link or bar connecting the forward end of the shoe to one of the arms, a pivoted hand lever, and a link or bar connecting this hand lever with an arm on the axle, substantially as set forth.

6. The combination with the frame of a seeder, oscillatory axle having arms thereon, and wheels in which the axle is supported, of shoe having yielding connection at one end or point with the frame, a link or bar connecting the opposite end of the shoe with an arm on the axle, a hand lever pivoted to the frame, and link or bar connecting this hand lever to an arm on the axle, substantially as set forth.

7. A shoe for grain drills constructed of a flat tapering strip of metal with a thickened central portion which constitutes a cutting edge, the sides extended at an angle to each other from this thickened portion, substantially as set forth.

8. A shoe for grain drills constructed of a flat tapering strip of metal having a central channel and thickened at this point, the sides bent at an angle to each other, substantially as set forth.

9. A feed tube for a grain drill composed of several independent tubes adapted to telescope, and springs for holding these tubes yieldingly in place, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

WILLARD A. VAN BRUNT.

Witnesses:

A. W. WILCOX,

F. H. ROBERTS.