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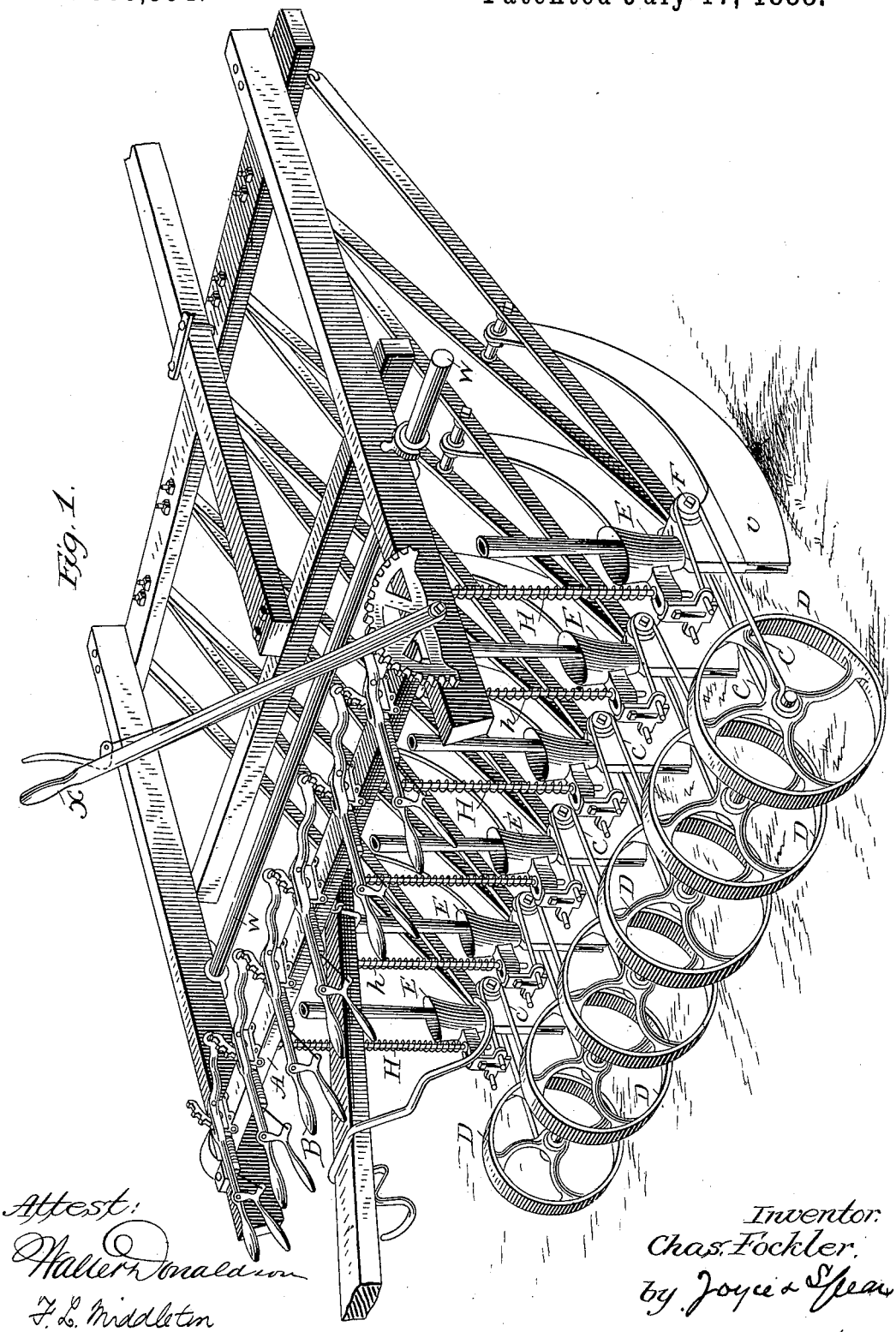
GRAIN DRILL.

No. 386,394. Patented July 17, 1888.

Fig. 1.



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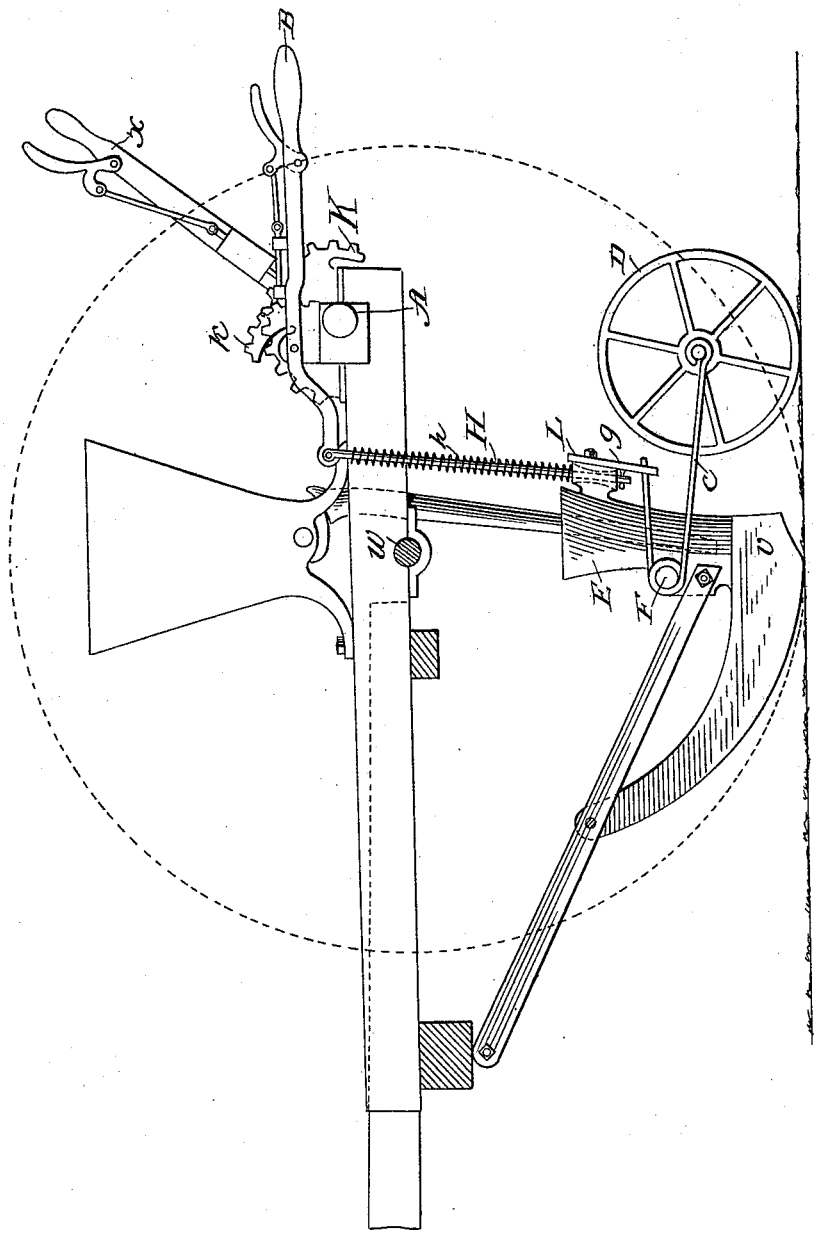

Fig. 2.

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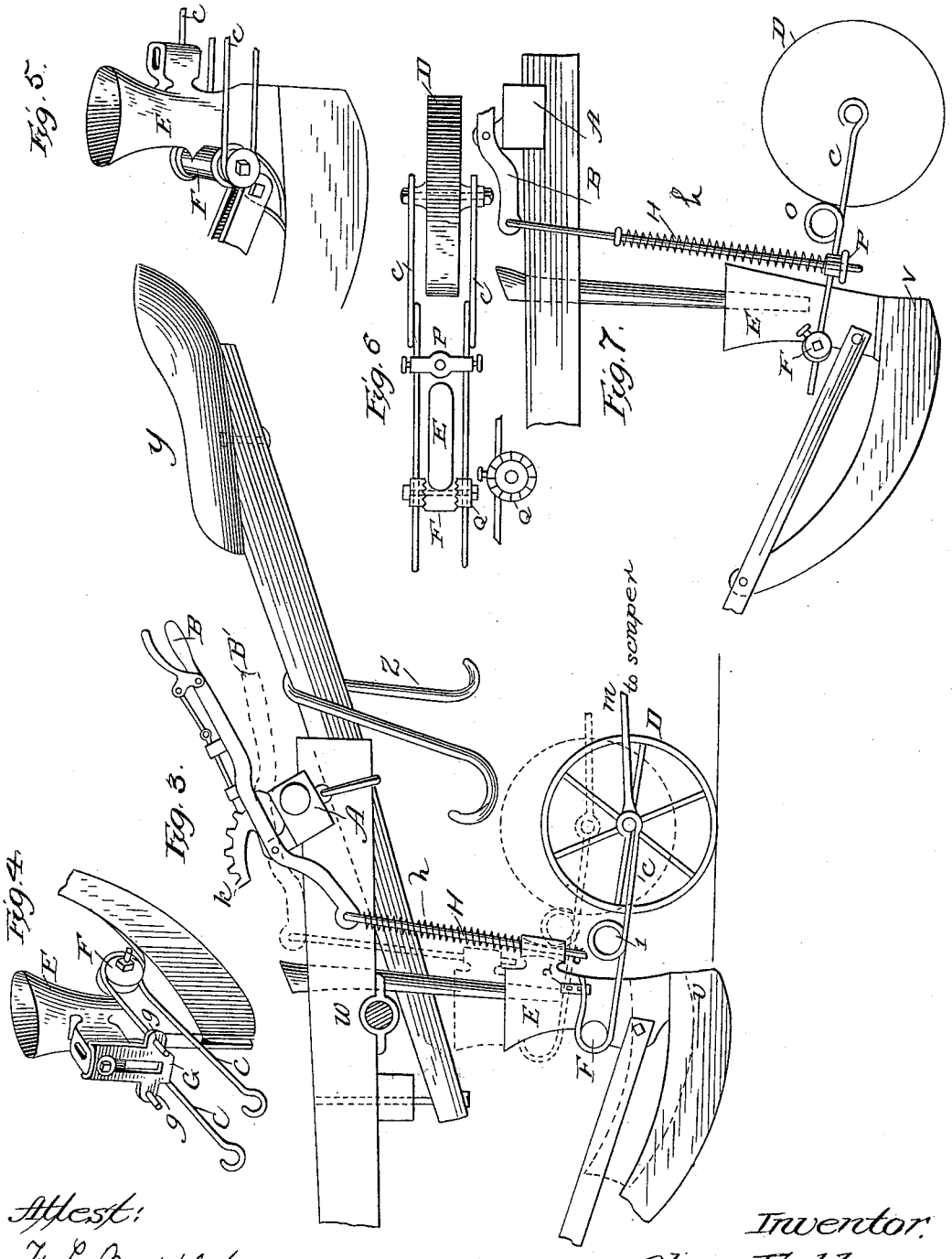

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GRAIN DRILL.

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Fig. 8.

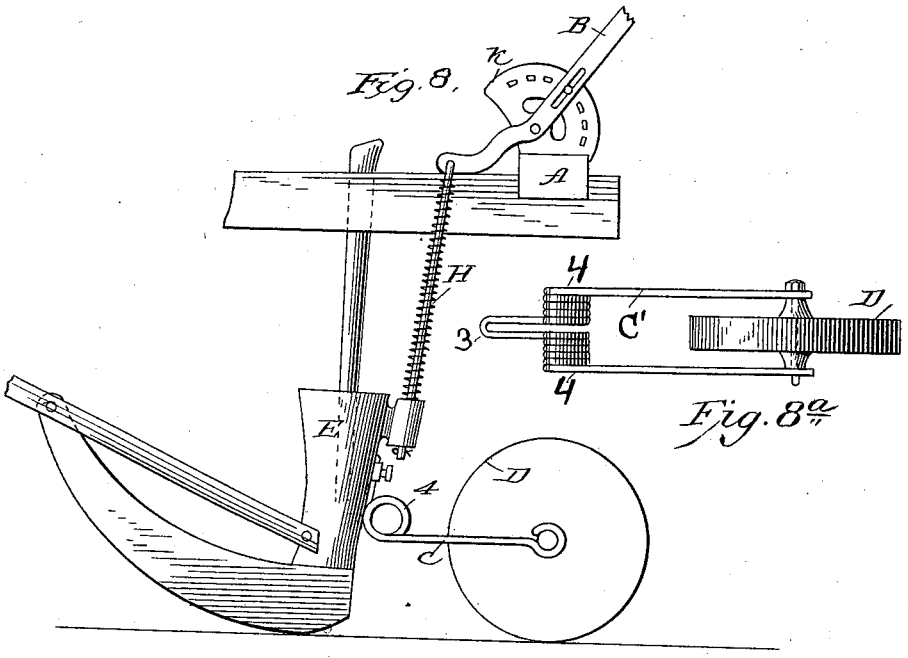
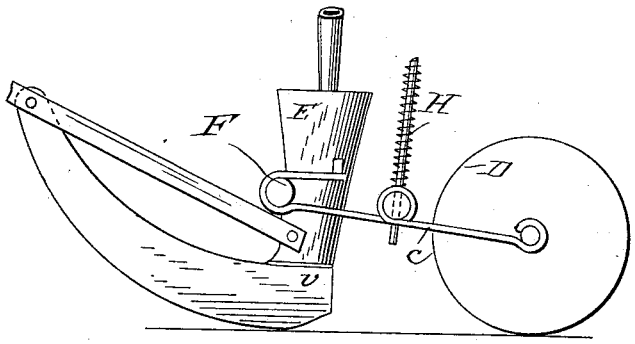


Fig. 8a.

Fig. 9.



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GRAIN DRILL.

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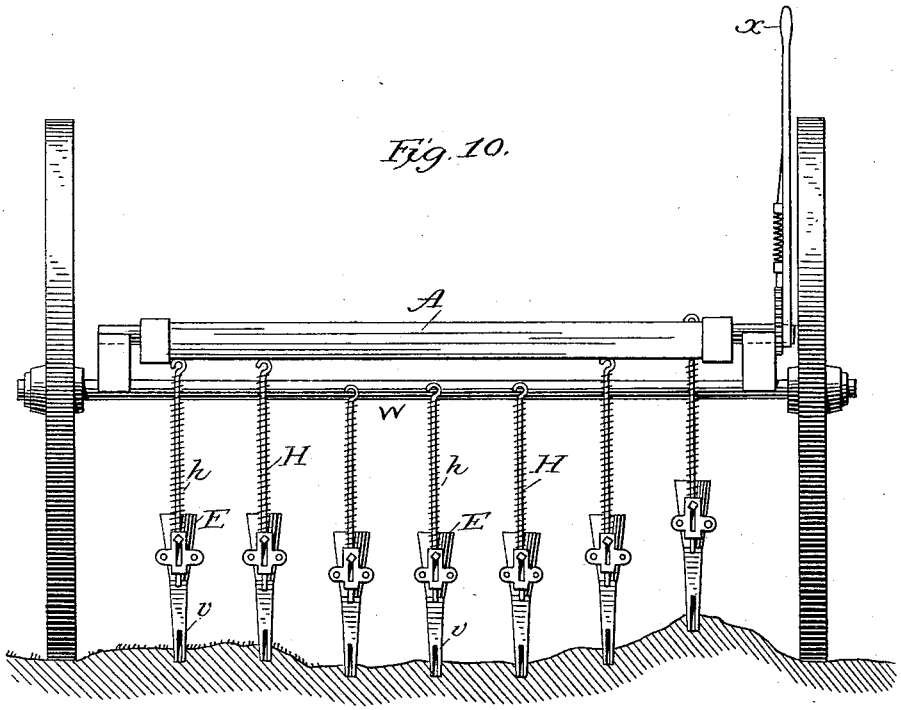
Fig. 10.



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UNITED STATES PATENT OFFICE.

CHARLES FOCKLER, OF EAST DUBUQUE, ILLINOIS.

GRAIN-DRILL.

SPECIFICATION forming part of Letters Patent No. 386,394, dated July 17, 1888.

Application filed June 8, 1885. Serial No. 167,942. (No model.)

To all whom it may concern:

Be it known that I, CHARLES FOCKLER, a citizen of the United States, residing in East Dubuque, Jo Daviess county, State of Illinois, have invented a new and useful Improvement in Grain-Drills, of which the accompanying drawings are a representation thereof.

My invention relates to grain-drills, principally of that class known as "shoe" or "runner" drills.

The first object sought is to provide means whereby the shoes may all be lifted or depressed together, or any one may be lifted or depressed without changing the position of the others, and thereby the machine may be made to adapt itself to inequalities of the ground.

The second object sought is to connect the following wheels with the runners or shoes by spring-connections, and for convenience and simplicity of construction to make the spring serve also as a traction-bar for the wheel, whereby the wheel as it is drawn along is also capable of passing obstructions and returning through the force of the spring to its proper path.

In connection with the above are subordinate objects relating to the details of construction, whereby simplicity and effective working are secured.

In the accompanying drawings, Figure 1 represents a perspective view of my improved seeder. Fig. 2 is a longitudinal section showing some of the working parts in side elevation. Fig. 3 is a similar section showing the seat, changed position of the supporting-bar, and some modifications of details. Figs. 4 and 5 show details of construction. Fig. 6 shows a plan view of the device for connecting the wheel to the shoe. Fig. 7 shows the same in side elevation. Fig. 8 shows a modification of Fig. 7. Fig. 8ª shows a modification of Fig. 7. Fig. 9 shows also a modified form of the spring connecting-bar. Fig. 10 is a rear elevation of a part of the machine, showing the shoes on uneven ground.

The frame-work of my improved seeder is of ordinary construction, and is supported upon an axle, *w*. (Shown in Fig. 1 without the wheels.) On the frame in rear of the axle is a main lifting-bar, A, pivoted on the side pieces of the frame, and having a hand-lever, *x*, fixed thereto, so that the lifting-bar may be rocked by the movement of the lever. Attached to the frame by the side of the lever is a segment, and the lever has an ordinary locking-bolt, so that it may be held upon the segment in any required position, and thus hold the lifting-bar to raise and lower the runners.

Mounted upon the lifting-bar are levers B B. These levers are pivoted to casting K, which are bolted to the upper surface of the bar A and serve as a pivotal bearing for the levers, while the upper part of the casting is formed into a segment the teeth of which engage with the pawls of the levers B and hold said levers in any desired position.

The handles of the levers project to the rear, and the front ends of the levers are connected by rods H to the shoes or runners V, so that any given runner may be raised by the lever B to any desired height and be held in that position without regard to the other runners. The rods are connected to the shoes by means of a lug on the fluke E, which lug is provided with a vertical hole flared above and below, and the rod passes through the hole and is held by the key below. This allows the runner to rise on the rod, but does not permit it to descend farther beyond the position than the rod is set. On the rod is a coiled spring, *h*, the lower end of which bears against the upper face of the lug, while the upper end bears against the upper end of the lever, and the tension of the spring is made to give the desired amount of pressure on the runner to hold it to its work.

The different positions of the main lifting-bar A are illustrated in Figs. 2 and 3. In Fig. 3 the bar is shown in dotted lines in position to hold the runners which are lifted out of the ground. In this position the bar is locked to the pawl or bolt on the lever X. In this figure, in full lines, the main lifting-bar A is tipped forward, so that the castings or brackets *k*, which support the levers B, are tipped forward, thus lowering all the levers B the same given distance and dropping to that extent the runners. The different positions of the levers B are illustrated in Fig. 3, where the lever B is in position to allow its runners

to enter the ground on one level, while the lever marked B′ in the drawings is raised to correspond to the inequalities of the ground. The other levers, B, may be set in the same way, in order to adjust the shoes to inequalities of the ground, and may be moved independently of the bar A, while the bar A serves to lift all simultaneously without respect to their independent positions.

It will be observed, as shown in Fig. 3, that the seat Y is supported on the bracket just in rear of the levers B, as well as in rear of the levers X, so that the driver can manipulate any one or more of the levers, as he may see fit. At the same time each runner has an independent upward movement against the spring *h* on the rod H. A suitable foot-rest for the driver is shown at *z*. The shoes or runners V are connected to the forward part of the frame by suitable braces, as shown clearly in Fig. 1. The runners or shoes V are set with their rear ends directly under the axle, as shown clearly in Fig. 2. The result of this is that when they are forced into the ground by the mechanism shown there is no neck-pressure caused on the end of the tongue, as there would be if the rear line of the runner were set back of the axial. The pressure-wheel D, when heavy pressure is applied to the runners, will throw some weight on the necks of the horses, according to the hardness of the ground and the amount of leverage applied to the lifting-bar A; but as the driver's seat is shown in Fig. 3 as twice the distance back of the center of the following or pressure wheels D as those wheels are over the center of the main axis, the weight of the driver may counterbalance this pressure.

As above described, I have provided mechanism for controlling the motion of the runners to adapt them to inequalities—that is to say, to raise them in order to give a proper depth to the seed on higher surface, or to depress them for the same purpose in a hollow, or to trip over the obstructions. I have found it desirable to connect the pressure of the runners also by elastic connections, in order that the runners may have independent movement of their own, and not be held in line and in proper position by elastic force, and I have devised means for this purpose. These special means are shown slightly modified in various figures, all of which involve the same general principle of construction.

I have described the form first shown in Figs. 1 and 4. The wheels D are designed one for each runner. On each side of the wheel I provide a connecting-rod, C, made, preferably, of steel rods or wire. The rear end is coiled to embrace the axle of the wheel, and the front end is coiled around a stud, F, on the side of the fluke. The end of this wire is then carried back, as shown at *c*, and passes through a hole, *g*, on a casting, G, which is fixed, in this case, to the rear of the lug, heretofore described, on the fluke. It is fastened to this lug by means of a bolt passing through the casting, so that it may be vertically adjusted to give any desired amount of pressure upon the wheels. As shown in Figs. 1 and 4, there is one of these rods on each side of the wheels, and they form an elastic draw-bar for the wheels and allow them to spring in any direction, according to the requirements of their work; but in returning them to a position in line with the runners this spring may be variously moved. For example, it may have an intermediate coil, 1, as shown in Fig. 3, and may be connected at its free end to a casting, 2, on the side of the fluke; or the end may be attached to the casting on the rear surface of the fluke, as shown in Fig. 2. I prefer, however, to make the spring-rod, as shown at C′, out of one piece bent at 3, and having two coils, 4 4. (Shown in Fig. 8ª.)

Another form is shown in Figs. 6 and 7, in which the front end of the rod C is straight, and is carried on each side and through a toothed nut, Q, by which it is attached adjustably to the lug F on the fluke. In this case the rod has an intermediate coil. I have also shown the rod H connected directly to the connecting-rod C by means of a cross-bar, P, through which the rod H is passed.

I have also shown in Fig. 8 a modification of the segment which holds the lever B in position. This segment has holes made through its edge, instead of teeth, to receive a spring-catch, which in this case is simply a transverse bolt attached to a spring-lever, which is adapted to laterally spring from the segment to be moved, and then to spring toward the segment to connect and form connections therewith.

In all cases these spring-rods have their point of connection with the fluke and with the wheel in a direct line of draft, and the coils are in vertical planes in those lines, so that the wheel follows in the path of the fluke under all circumstances. In case it be pressed aside by any obstruction, the bars C would spring it back in line of draft in passing the obstruction. As shown in Fig. 3, the wheels are provided with a scraper, M. Figs. 3 and 10 show the mode of operation of the levers and their connections with the shoes, and from these and Fig. 1 it will appear that when the shoes or runners are in different positions in relation to the bar A, whereby they are adapted to inequalities of the ground, and they are still all under the same pressure, the tension of the spring is not changed by the movement of the levers B.

I claim as my invention—

1. In a seeder, a series of independent levers, B, pivoted on a transverse bar of the frame, each provided with a toothed segment and a pawl and connected severally to the runners by rods and springs, substantially as described.

2. In combination with the main lifting-bar A, a series of levers, B, pivoted thereon and connected severally to the runners, toothed segments on the bar A, to hold the pawls of

the levers B, and a lever and pawl on the bar A, with toothed segment on the frame, whereby any of the runners may be moved separately or all together, substantially as described.

3. In combination with the runners or shoes of the seeder, the pressure-wheels and the spring-rods connecting the wheels and runners, all substantially as described.

4. In combination with the pressure-wheel and runner of a seeder, a spring connecting-rod, said spring-rod having its end connected adjustably to the runner or fluke, whereby the pressure may be regulated, all substantially as described.

5. In combination with the pressure-wheels and runners, the spring connecting-rod C, coiled about a stud, F, and having its end projecting beyond said stud and bearing on a fastening device, all substantially as described.

6. The combination, with the wheels and runners of the seeder, of the spring-rod C, one upon each side of the wheel, the rods having a spring-coil between the wheel and the runner, substantially as described.

7. The series of levers B, mounted upon the main adjusting-bar, and rods H, having spring *h*, and lugs upon the fluke to receive the lower ends of the rod H, whereby the runners in whatever position are always under the same pressure, substantially as described.

CHARLES FOCKLER.

Witnesses:
LEWIS A. OLSEN,
ALEX. SIMPLOT.