

(No Model.)

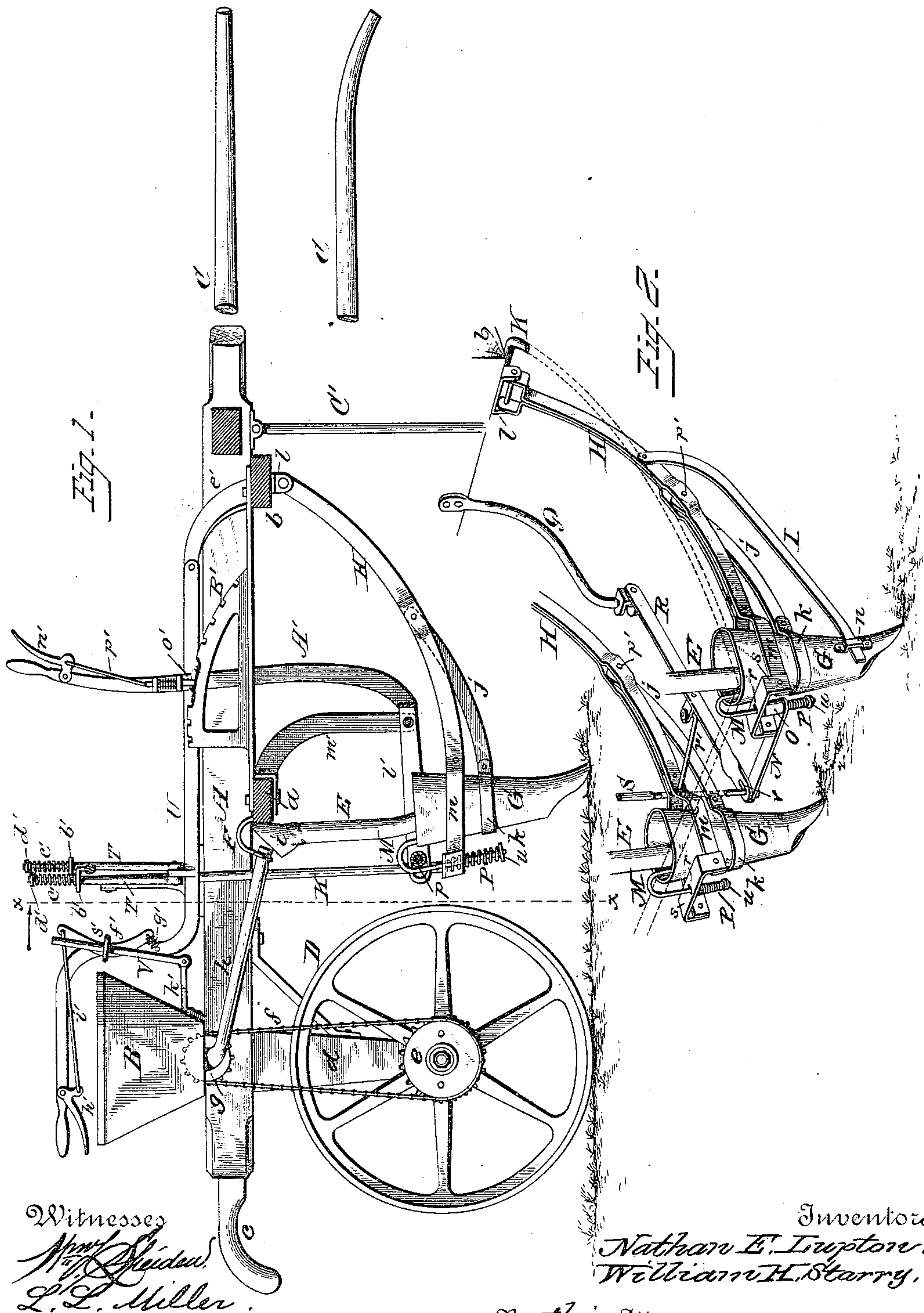
2 Sheets—Sheet 1.

N. E. LUPTON & W. H. STARRY.

GRAIN DRILL.

No. 362,848.

Patented May 10, 1887.



Witnesses
Wm. Steider
L. L. Miller

Inventors
Nathan E. Lupton
William H. Starry

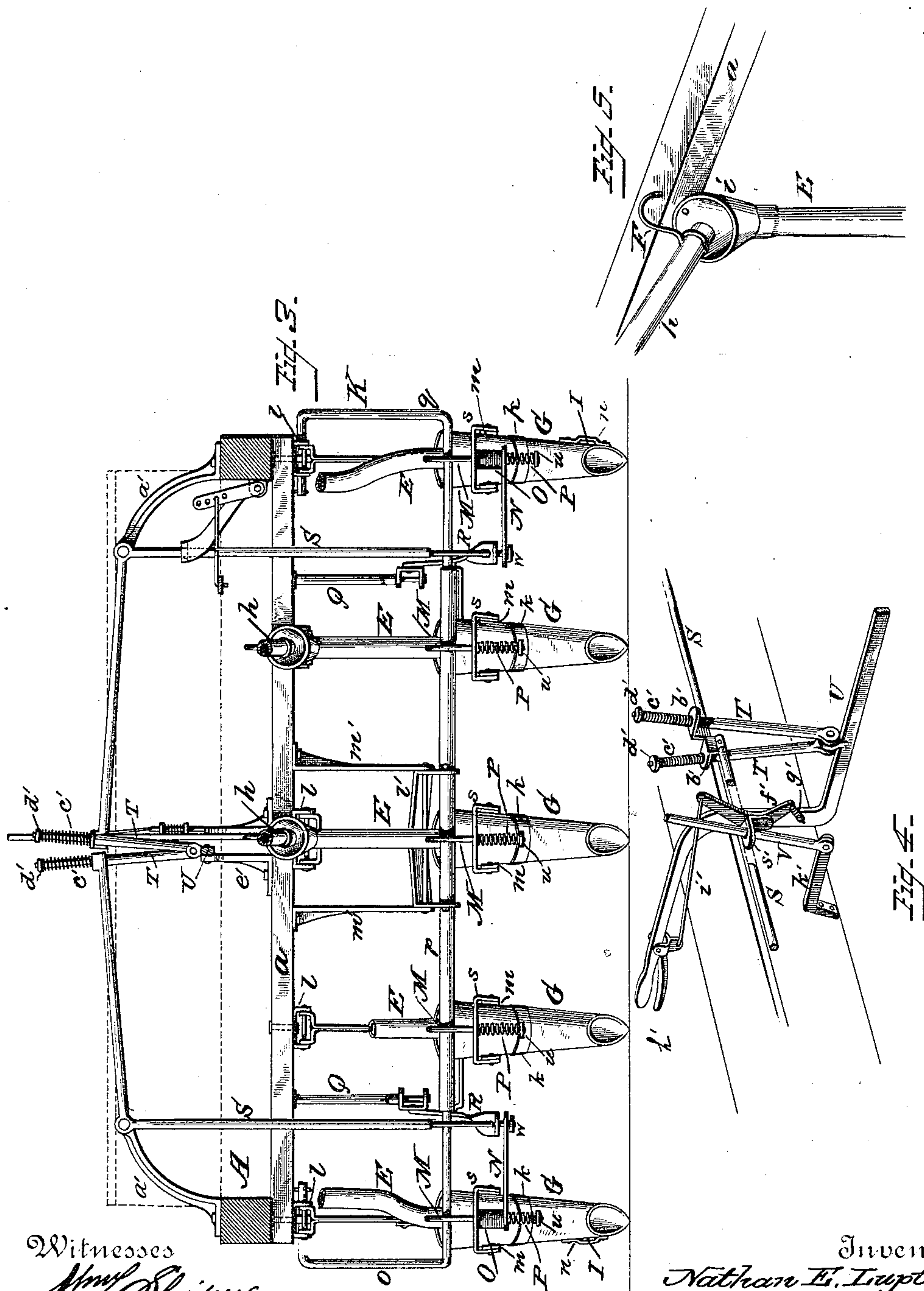
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UNITED STATES PATENT OFFICE.

NATHAN E. LUPTON, OF RIDGEVILLE, AND WILLIAM HENRY STARRY, OF TRENTON, OHIO.

GRAIN-DRILL.

SPECIFICATION forming part of Letters Patent No. 362,848, dated May 10, 1887.

Application filed February 25, 1887. Serial No. 238,818. (No model.)

To all whom it may concern:

Be it known that we, NATHAN E. LUPTON and WILLIAM HENRY STARRY, citizens of the United States, residing, respectively, at Ridgeville, Warren county, Ohio, and Trenton, in the county of Butler and State of Ohio, have invented certain new and useful Improvements in Grain-Drills; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a side elevation of our improved grain-drill, partly in section; Fig. 2, a detail view in perspective of two of the drill-teeth, with their several connections; Fig. 3, a transverse section taken on line *x x* of Fig. 1, looking in the direction of the arrow; Fig. 4, a detail view in perspective of the lever and its connections for moving the drill-teeth laterally, and Fig. 5 a similar view of the discharge-pipe and spout for delivering the grain to the hollow tooth.

The present invention has for its objects to provide a practically-operating grain-drill in which the teeth can be either raised or moved horizontally in a lateral direction by an arrangement of simple and easily-operating mechanism under the control of the driver, and the drill improved in its several details of construction, whereby a more perfect and satisfactorily-operating machine is provided. These objects we attain by the construction substantially as shown in the drawings and hereinafter described and claimed.

In the accompanying drawings, A represents the frame of the machine, of any suitable size and construction, having connected to its under side two transverse beams, *a b*, and supporting at its rear end the usual hopper, B, for containing the grain. The frame A at its rear end is provided with suitable handles, *c*, and at its forward end has the shafts C. (Shown in Fig. 1 in broken section.) The frame A is supported by wheels D, mounted upon stationary axles projecting from the sides of hangers *d*, and one of said wheels is provided with a sprocket-wheel, *e*, over which passes a sprocket-chain, *f*, said chain extending upward and passing around a sprocket-wheel, *g*,

which operates the feed devices in the hopper B to deliver the grain or seed to the pipes *h*. The free ends of these pipes are held over the mouth of delivery-spouts E, which are provided with a funnel-shaped mouth, *i*, a wire bracket, F, secured to the beam *a*, serving to hold the end of the pipe in line with the spout, as above stated, and is preferably formed of spring-wire, so as to allow the flexible pipes *h* to yield.

We do not desire to limit ourselves to the described means for operating the grain in the hopper for the purpose of delivering it to the pipes heretofore mentioned, as any well-known means or arrangement of devices may be employed for this purpose without departing from the principle of our invention.

The shafts C, as will be seen, have their ends curved inwardly, so as to not come in contact with the standing corn, and the rear handles, *c*, are designed for the purpose of more conveniently handling the drill or machine. The hoes or drill-teeth G are connected to bars *j*, said bars being pivoted at one end to bands *k*, encircling the teeth, and at their opposite end pivoted to a lever, H, the forward or upper end thereof being pivoted to a bracket, *l*, secured to the under side of the transverse beam *b*. This lever H is preferably curved, as shown, and is bifurcated at its rear end, as shown at *m*, in order to straddle the drill-tooth, and it is preferred to construct these levers of two independent strips of metal, as shown more clearly in Fig. 2; but they may be constructed in any well-known manner that will insure their action as levers, and for the purpose hereinafter described.

To one side of the levers H is pivoted guide-arms I, their free ends passing through loops *n*, secured to the sides of the drill-teeth G, and each tooth may be provided with one of these guide-arms or only the two outer teeth, as shown in the drawings. It should be understood that the brackets *l* are not rigidly secured to the transverse beam *b*, but are pivoted thereto, for the purpose hereinafter described.

To the under side of the beam *a* is pivoted the ends of a frame, K, said frame extending down at its sides and transversely across the frame of the machine, as shown more clearly in Fig. 3. This frame is made extensible, and

is therefore constructed of three sections, *o* *p* *q*, the central section, *p*, being tubular, to receive the ends of the wire sections *o* *q*, which are bent, as shown. The several sections of the extensible frame *K* extend through yokes *M*, one end being secured to the inner side of the drill-tooth, and the other end extending down through an elongated slot, *r*, in a plate, *s*, secured to the bifurcated end of the lever *H*, and down through the end of a plate, *N*, said plates being at the extremities of the frame only, as shown in Fig. 3; and interposed between the outer ends of said plates *N* and plates *s* are rubber buffers *O*, to retain said plates a suitable distance from each other. The outer ones of the loops or yokes *M* pass through these rubber buffers *O* and have on their ends, below the plates *N*, spiral springs *P*, which are supported on the ends of the yokes by nuts *u*, engaging with the screw-threaded end of the yoke, thereby providing means for increasing or diminishing the tension of the spring, as found desirable.

Depending rods *Q* are secured at one end to the transverse beam *b*, and at their lower ends form stationary pivots for the forward ends of levers *R*, as shown in Fig. 2. The rear ends of the levers *R*, which are two in number, are provided with elongated slots *v*, through which pass the reduced ends of bell-crank levers *S*, said levers also passing through the ends of the plates *N*, and are provided with screw-nuts *w*. The bell-crank levers *S* are pivoted to standards *u'*, secured to the side beams of the frame *A*, and the inner ends of the levers are pivoted to plates *b'*, through which pass rods *T*, a spiral spring, *c'*, being interposed between a nut, *d'*, on the upper end of the rod and the plates *b'*, the spiral spring being coiled around the rods, as shown in Fig. 4. The lower ends of the rods *T* are pivoted to a curved lever, *U*, which in turn is pivoted at its forward end to a bracket, *e'*, secured to the transverse beam *a*. The lever *U* has pivoted to it a short arm, *f'*, which at its lower end is connected to the lever by a spring, *g'*, and at its upper end to a hand-grip, *h'*, by means of the rod *i'*, said hand-grip being pivoted to the lever near the handle thereof, and to the arm *f'* is an eye-plate, *s'*, suitably secured in position, and through which passes a rod, *V*, pivoted at its lower end to an arm, *k'*.

To the central portion of the laterally-extensible frame *K* is connected the bifurcated end *l'* of a lever, *A'*, said lever at its lower end being pivoted to hangers *m'*, which are secured to the transverse beam *a*, and the upper end of said lever having the usual handle for operating it, the pivoted hand-grip *n'*, provided with a spring-pawl, *o'*, connected to the hand-grip by rod *p'*, said pawl engaging with the notches in a rack-bar, *B'*.

The levers last described are for the purpose of raising the extensible frame *K*, and with it the drill-teeth *G*, or lower them, as found desirable.

By the employment of the yokes *M*, provided

with the springs *P*, in connection with the levers *H*, which are adapted to straddle the drill-teeth at their bifurcated ends, the teeth have a very free and independent movement imparted to them.

It should be understood that the center one of the brackets *l* is not pivoted to the transverse beam *a*, but rigidly secured thereto in any preferred manner, for the reason that it is not necessary to laterally adjust the center drill-tooth, but only the ones upon each side of it; but all have the same means by which they are raised or lowered.

By the employment of the spiral springs *P* the drill-tooth is given a free action when pressure is brought thereon. The arm *j* is connected to the lever *H* by means of a wooden pin, *p'*, as shown in Fig. 2, so that when the tooth comes in contact with any obstruction the wooden pin will break and the tooth be released.

We do not desire to be confined to the rubber buffers *O*, as in place thereof any suitable yielding cushion may be substituted that will serve the same purpose.

By the employment of the extensible frame *K* and the bell-crank levers *S* and devices for operating said levers, hereinbefore described, the drill-teeth may be set farther apart or nearer together, as found desirable, and when the lever mechanism is operated the drill-teeth will be moved laterally in either direction, thereby controlling the teeth in their adjustment, so that they are at all times the same distance apart with relation to each other. The action of the extensible frame is considered of material importance, and when the frame is contracted the ends of the frame or sections *o* *q*, when coming in contact with the corn, will be forced inwardly, bringing the drill-teeth nearer together, regulating the distance occupied by the line of teeth.

The ratchet-bar *B'* is not provided with teeth throughout its length, but a portion left smooth, where the spring-pawl will rest when the teeth are working, thereby allowing the lever *A'* to have a free action in connection with the teeth when no pressure or lifting is required.

The levers *R* are connected to the levers *H* by rods *r'*, as shown in Fig. 2, said stay-rod being made fast to the lever *H*, or otherwise connected to both the levers so that it will admit of their having a free movement.

The clamping device, in connection with the lever *U*, takes the place of the ordinary pawl and ratchet. The short arm *f'*, in connection with the pivoted rod *V* and eye-plate *s'*, act together as a clamping device to hold the lever firmly in its adjusted position without the necessity of the employment of the notched plate and pawl heretofore in use.

When the machine is passing through a corn-row and suddenly approaches to where the row becomes narrow, and before the attendant would have time to contract it, the standing corn would come in contact with the guide-bars *I* and cause them to contract automatic-

ally to form a curved line; and in connection with the pressure upon the end sections, *o q*, of the extensible frame it is contracted by coming in contact with the standing corn.

5 Any suitably-constructed hopper may be provided for the machine, and may be provided with an automatic cut-off and be adapted to feed any kind of grain, and therefore we reserve the right to make any change in the
10 hopper and its feeding connections that comes within ordinary mechanical skill.

If preferred, supporting-bars *C'* may be employed, which are pivoted to the front end of the frame of the machine, said bars acting as
15 legs, so as to support the frame when the machine is not in use; but when in use or while the drill is in operation the arms are swung up under the frame out of the way.

The wheels are adjustable on the hangers *d*
20 in any well-known manner, whereby they may be raised or lowered to regulate the height of the machine to suit the nature of the ground.

Having now fully described our invention, what we claim as new, and desire to secure by
25 Letters Patent, is—

1. In a grain-drill, the extensible frame *K*, consisting of the adjustable end sections, *o q*, and tubular central section, *p*, in combination with the drill-teeth *G*, substantially as and
30 for the purpose set forth.

2. In a grain-drill, the combination, with the bell-crank levers *S*, pivoted rods *T*, and springs *c'*, of the curved lever *U*, short arm *f'*, spring

g', eye-plate *s'*, and rod *V*, as a means of operating in a lateral direction the drill-teeth 35 and holding them in their adjusted position, substantially as and for the purpose specified.

3. A grain-drill provided with a main supporting-frame having a suitable hopper and an extensible frame, said supporting-frame being provided with shafts having their ends bent inwardly, as shown, and for the purpose set forth. 40

4. In a grain-drill, the hopper *B*, provided with pipes *h*, supported at their ends by wire brackets *F*, and the funnel-shaped tubes *E*, in combination with the drill-teeth *G*, the bifurcated levers *H*, pivoted to brackets *l*, which are in turn pivoted to the transverse beam *b*, and the yokes *M* and springs *P*, substantially 50 as and for the purpose set forth.

5. In a grain-drill, the swiveled levers *H*, provided with guide-arms *I* and the drill-teeth *G*, in combination with the slotted levers *R*, rods *r'*, slotted plates *s*, plates *N*, buffers *O*, and springs *P*, substantially as and for the purpose specified. 55

In testimony that we claim the above we have hereunto subscribed our names in the presence of two witnesses.

NATHAN E. LUPTON.
WILLIAM HENRY STARRY.

Witnesses:

H. J. DEATH,
PERRY H. RUE.