

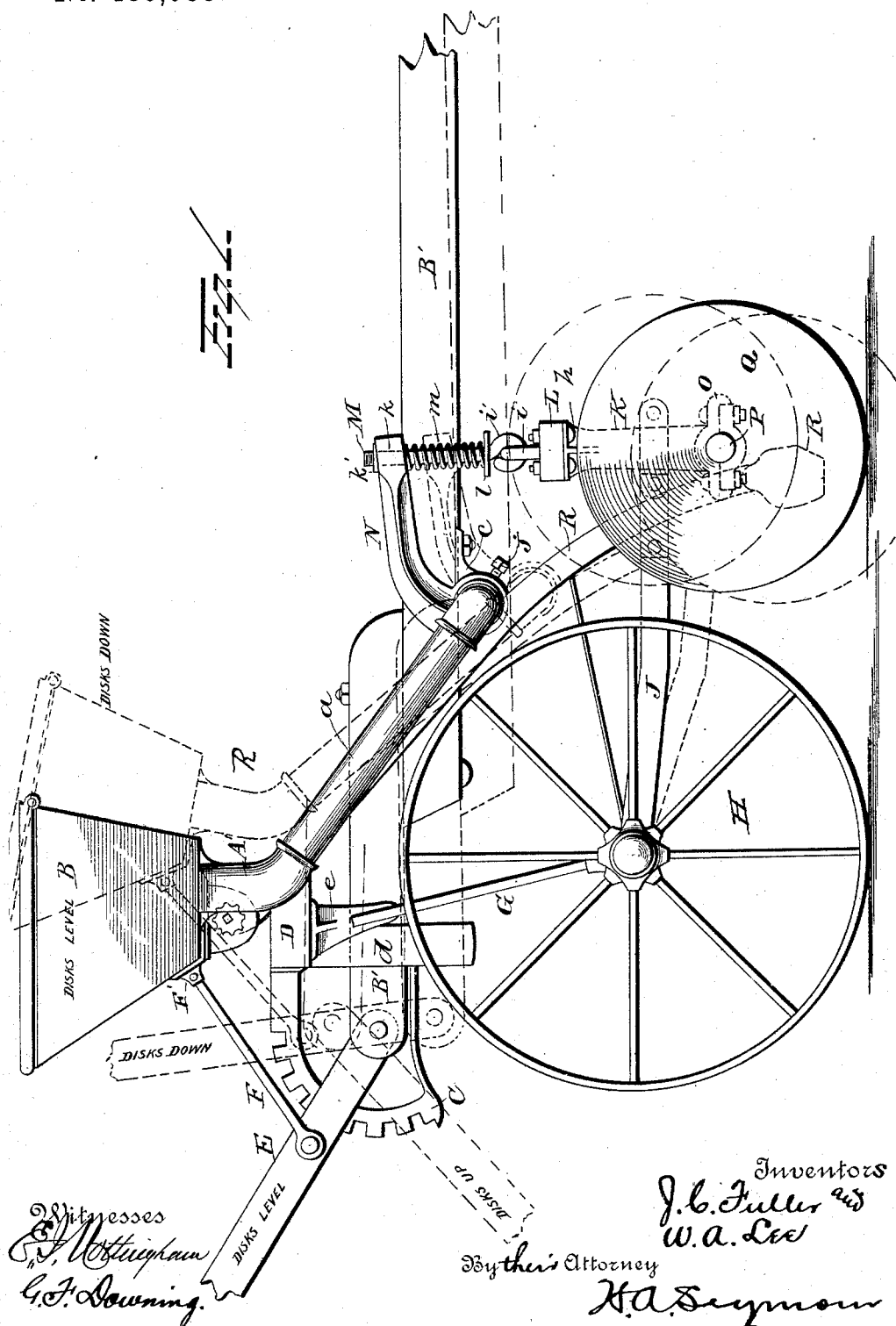
(No Model.)

4 Sheets—Sheet 1.

J. C. FULLER & W. A. LEE.
GRAIN DRILL.

No. 486,035.

Patented Nov. 8, 1892.



Witnesses
J. C. Fuller
W. A. Lee

By their Attorney

Inventors
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(No Model.)

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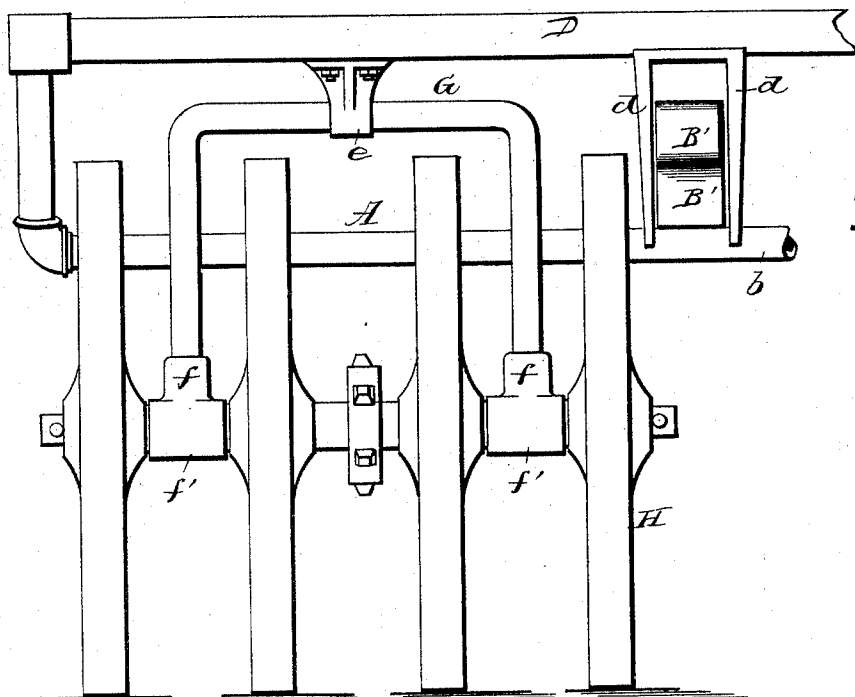
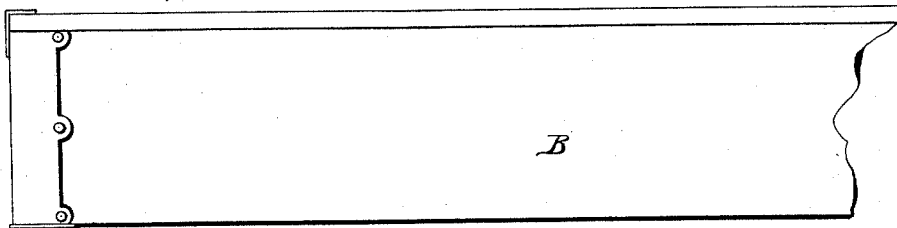


Fig. 2.

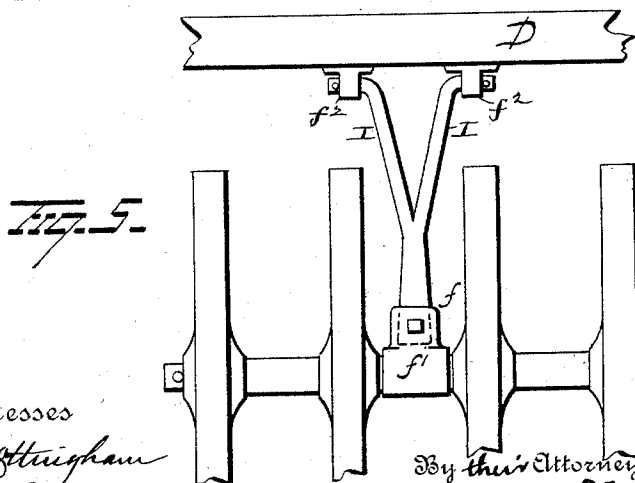


Fig. 5.

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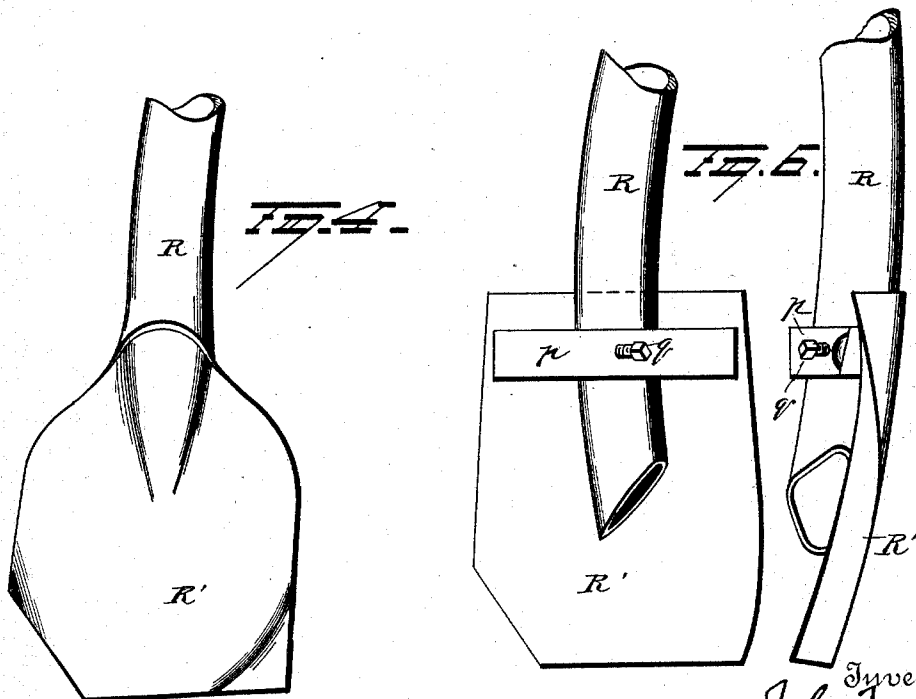
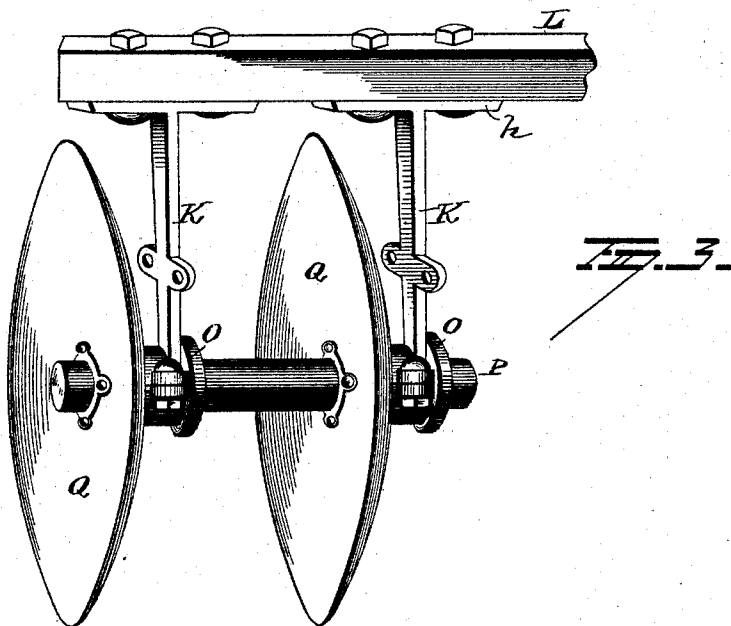
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(No Model.)

4 Sheets—Sheet 4.

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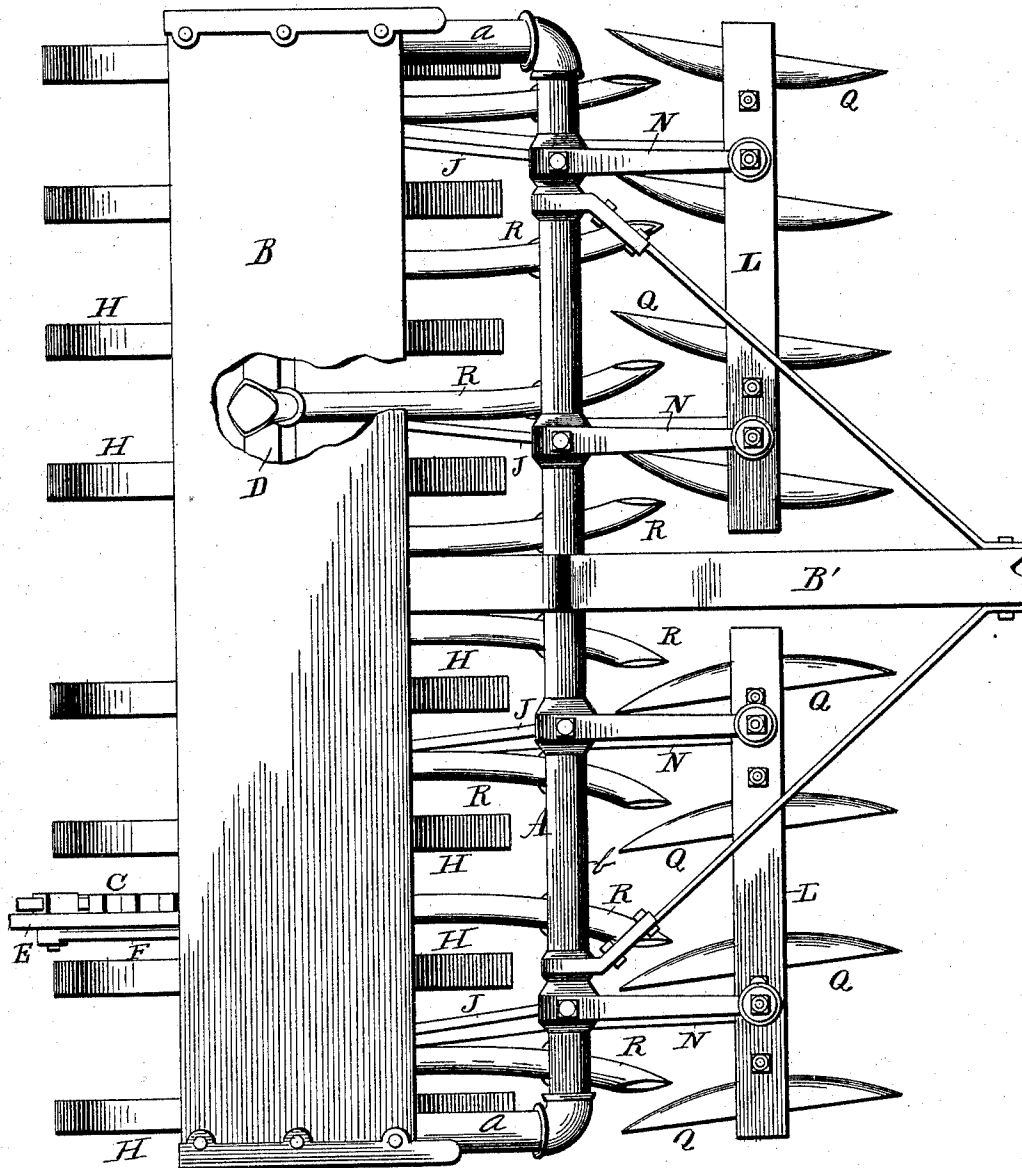


Fig. 7.

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UNITED STATES PATENT OFFICE.

JAMES C. FULLER AND WILLIAM A. LEE, OF WINFIELD, KANSAS.

GRAIN-DRILL.

SPECIFICATION forming part of Letters Patent No. 486,035, dated November 8, 1892.

Application filed November 21, 1890. Serial No. 372,235. (No model.)

To all whom it may concern:

Be it known that we, JAMES C. FULLER and WILLIAM A. LEE, of Winfield, in the county of Cowley and State of Kansas, have invented certain new and useful Improvements in Grain-Drills; and we 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.

This invention relates to an improvement in grain-drills, and more particularly to press grain-drills; and our 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 of the machine. Fig. 2 is a rear view showing the manner of connection of one series of covering-wheels to the frame. Fig. 3 is a detached view illustrating the construction and connection of the furrow-disks. Figs. 4 and 6 are views illustrating the form and construction of the guide-plate at the lower ends of the delivery-tubes. Fig. 5 is a modification of the manner of connecting the press-wheels to the frame, and Fig. 7 is a plan view.

The frame of the machine comprises, in part, a U-shaped frame A, preferably made of iron pipe. The arms *a* of the frame A extend upwardly in an oblique direction and connect at their upper ends with socketed brackets A', which latter are adapted to support a seed-box B. A tongue B' is mounted on the horizontal bar *b* of the frame A, preferably at its center, and loosely connected therewith by means of a clip *c*. Secured at one end to the rear end of the tongue extension is a toothed segment C, which is secured at its other end to a cross bar or timber D. A lever E is pivoted to the rear end of the tongue extension and provided with a finger bar and rod adapted to engage the toothed segment C, said lever being connected to the seed-box by means of a rod F, pivotally connected at one end to the lever E at a point between its ends and at the other end to a suitable casting F', secured to the seed-box or upper part of the frame for a purpose explained further on. Projecting downwardly from the cross

shaft or beam D are arms *d*, adapted to embrace the rear end of the tongue and prevent it from lateral movement. Also secured to the cross bar or beam D is a series of two or more perforated ears *e*, each adapted to loosely support a yoke G. The lower ends of the arms of the yoke G are connected with perforated bosses *f* of collars *f'*, which latter are adapted to encircle the axle of one or more series of covering-wheels H. From this construction it will be seen that the weight of the machine will be upon the covering-wheels and that by loosely connecting said wheels to the machine, as above explained, the wheels will adapt themselves to inequalities in the surface of the ground, and thus avoid strain which might otherwise be brought to bear upon the operating parts of the device.

Instead of connecting the covering-wheels to the machine, as above set forth, the construction shown in Fig. 5 may be adopted. In this construction a Y-shaped bracket I is pivotally connected at its smaller end to the projection *f* of the collar *f'*, located in the center of the axle of each series of covering-wheels, and at their upper ends are pivotally connected to lugs *f*² on the cross bar or beam D.

Loosely connected with and projecting forwardly from the axles of the covering-wheels H is a series of push-bars J, which are connected at their forward ends to a series of posts K or to perforated lugs projecting from said posts. The posts K are provided at their upper ends with flanges *h*, whereby to secure them to a bar L, as shown in Figs. 1 and 3. This bar L is provided at its center with a loop *i* for the reception of a loop *i'*, formed at the lower end of a rod M. A curved arm or bracket N is provided at one end with an opening and loosely mounted on the arm *a* of the frame A and adjustably secured thereto by means of a set-screw *j*. The forward or free end of the arm or bracket N is provided with a perforation *k* for the reception of the upper screw-threaded end of rod M, a suitable nut *k'* being screwed upon the upper end of the rod M to maintain it in its proper place. A washer *l* is placed on the rod M immediately over the loop *i'* and encircling said rod, and bearing at one end against the washer

or disk *l* is a spring *m*, which bears at its upper end against the arm or bracket *N*. If desired, one or more brackets *N* and rods *M* may be employed.

5 At the lower end of each post *K* one half of a bearing-block *O* is formed, the other half of each block being secured to the first half by means of suitable bolts, as shown in Figs. 1 and 3. In each pair of bearing-blocks *O* an
10 axle *P* is journaled, and secured to each axle *P* is a furrow-disk *Q*. The posts *K* are so arranged that the pairs of disks *Q* shall be disposed at an angle to the line of draft of the machine. The seed-box is provided with seed-
15 cups and feed mechanism of any preferred construction, and communicating with the seed-cups and passing through the frame of the machine is a series of delivery-tubes *R*, which are connected to the cross-bar *D* and
20 arm *b* of frame *A* by means of suitable yokes or other fastening devices. The tubes *R* are so curved that their lower ends shall terminate at points in proximity to and in rear of the disks *Q*, and the lower end of each tube
25 is provided with a guide-plate *R'*, which is preferably bent slightly inwardly toward the disk *Q* and its edges bent somewhat, as shown in Figs. 4 and 6, to produce a spoon-shaped plate. By thus constructing the delivery-
30 tubes the use of hoes will be dispensed with and the seed will be conveyed from the seed-box directly to the ground by the tubes *R*, and being guided by the guide-plates *R'* will be directed to the furrow made by the disks
35 *Q* immediately in rear of said disks. The guide-plates *R'* may be made integral with the tubes *R*, the tubes being opened, flared out, and shaped as shown in Fig. 4, or they may be made separate and adjustably secured
40 thereto by means of a plate *p* and a set-screw *g*, as shown in Fig. 6. It will be seen that with this latter construction the plates *R'* may be turned on the tubes *R* and made to act as scrapers for the disks *Q*. The tubes *R* being
45 loosely connected to the frame of the machine they may also be turned somewhat and the plates *R'* (shown in Fig. 4) be made to act as scrapers.

It will be seen from the construction of the
50 machine that if the furrow-disks should strike an obstruction they would be permitted to rise against the yielding resistance of the spring *m*.

The adjustment of the furrow-disks to regulate their depth in the ground or their distance from the ground when the machine is
55 traveling over a road is regulated by the manipulation of the lever *E*, and the movements of the various parts when said lever is manipulated may be described as follows: When
60 we throw the lever *E* down, the top of the seed-box is moved backward as many inches as the lever is moved backward. On moving the box backward the tongue rises and is
65 moved upward. The facts are that a line from the top of the box to the center of the

axle in the press-wheels and a line to the center of the disks shows nearly a right-angle triangle; or, in other words, if we take a square and set it on its edge the short arm of the
70 square will represent the push-bars and the long arm of the square will represent the line to the top of the box, and then move the long arm backward and the movements of the furrow-disks of our improved drill will be read-
75 ily seen. The lever *E*, connecting as it does with the end of the tongue, as we move it backward the tongue is raised up, being held in the neck-yoke of the horses permanently. The movement of the lever *E* at the rear of
80 the drill (counting the length of the tongue, which is twelve or thirteen feet) will with the greatest ease raise the entire front of the drill, as shown by dotted lines in Fig. 1.

It is evident that numerous slight changes
85 might be made in the details of construction of the invention without departing from the spirit thereof or limiting its scope. Hence we do not wish to limit ourselves to the precise details of construction herein set forth; but,
90 Having fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a grain-drill, the combination of a series of depending posts, an axle or shaft
95 mounted in the lower ends thereof, a series of furrow-disks on the axle or shaft, and push-bars engaging the disk-supports, substantially as set forth.

2. In a grain-drill, the combination, with a
100 series of push-bars, of a cross-bar, a series of posts carried by said cross-bar and connected to the push-bars, and furrow-disks carried in pairs or in sets of three or more by said arms, substantially as set forth.
105

3. In a grain-drill, the combination, with a frame and push-bars, of a cross-bar, means
for suspending said cross-bar from the frame, a series of posts carried by the cross-bar, and furrow-disks carried by said posts at an angle
110 to the line of draft of the machine, substantially as set forth.

4. In a grain-drill, the combination, with a movable frame and press-wheels, of arms or
115 brackets carried by the movable frame, cross-bars suspended from said arms or brackets, posts secured to said cross-bars, and furrow-disks carried by said posts, substantially as set forth.

5. In a grain-drill, the combination, with a
120 tongue, a frame loosely connected therewith, and press wheels, of arms or brackets projecting from said movable frame, a cross-bar suspended from said arms or brackets, posts carried by said cross-bars, and furrow-disks
125 carried by the posts, substantially as set forth.

6. In a grain-drill, the combination, with a tongue, a frame connected loosely therewith, and press-wheels, of arms or brackets adjust-
130 ably connected to said movable frame and projecting therefrom, a cross-bar suspended from said arms or brackets, posts carried by

the cross-bar, and furrow-disks carried by said posts, substantially as set forth.

7. In a grain-drill, the combination, with a tongue, a frame loosely connected thereto, and press-wheels, of arms or brackets projecting from said movable frame, a cross-bar yieldingly connected with the arms or brackets, posts projecting from said cross-bar, and furrow-disks carried by said posts, substantially as set forth.

8. In a grain-drill, the combination, with a tongue, a frame connected loosely thereto, a seed-box carried by said movable frame, and press-wheels, of arms or brackets projecting from said frame, a series of furrow-disks supported by said arms or brackets, and means for moving said movable frame to raise and lower the furrow-disks, substantially as set forth.

9. In a grain-drill, the combination, with a tongue, a frame connected loosely thereto and adapted to be oscillated, and press-wheels, of arms projecting from said oscillating frame, furrow-disks carried by said arms, and means for oscillating the frame and raising the tongue simultaneously to raise the furrow-disks, substantially as set forth.

10. In a grain-drill, the combination, with a tongue, an oscillatory frame, a seed-box carried by the oscillatory frame, and press-wheels, of arms projecting from the oscillatory frame, a cross-bar carried by said arms,

and posts secured to said cross-bar and carrying furrow-disks, substantially as set forth.

11. In a grain-drill, the combination, with a tongue, an oscillatory frame, a seed-box carried thereby, and press-wheels, of arms projecting from said oscillatory frame, furrow-disks supported by said arms, a rack-bar, a lever pivoted to the rear end of the tongue, and a rod connecting said lever with the seed-box or the oscillating frame, substantially as set forth.

12. In a grain-drill, the combination, with a cross-bar, of brackets secured thereto, yokes pivotally connected to said brackets, the arms of each yoke being loosely connected to an axle and carrying-wheels on said axles, push-bars projecting from said axles, and furrow-disks at the forward ends of said push-bars, substantially as set forth.

13. A grain-drill comprising a frame, seed-box, and wheels, the frame and box approximately balanced on the axle of the wheels, substantially as set forth.

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

J. C. FULLER.
W. A. LEE.

Witnesses:

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D. A. MILLINGTON.