2 Sheets—Sheet 1.

B. F. CARSON.

Wheat-Drill.

No. 225,742. **Patented Mar. 23, 1880.**

Fig. 1.

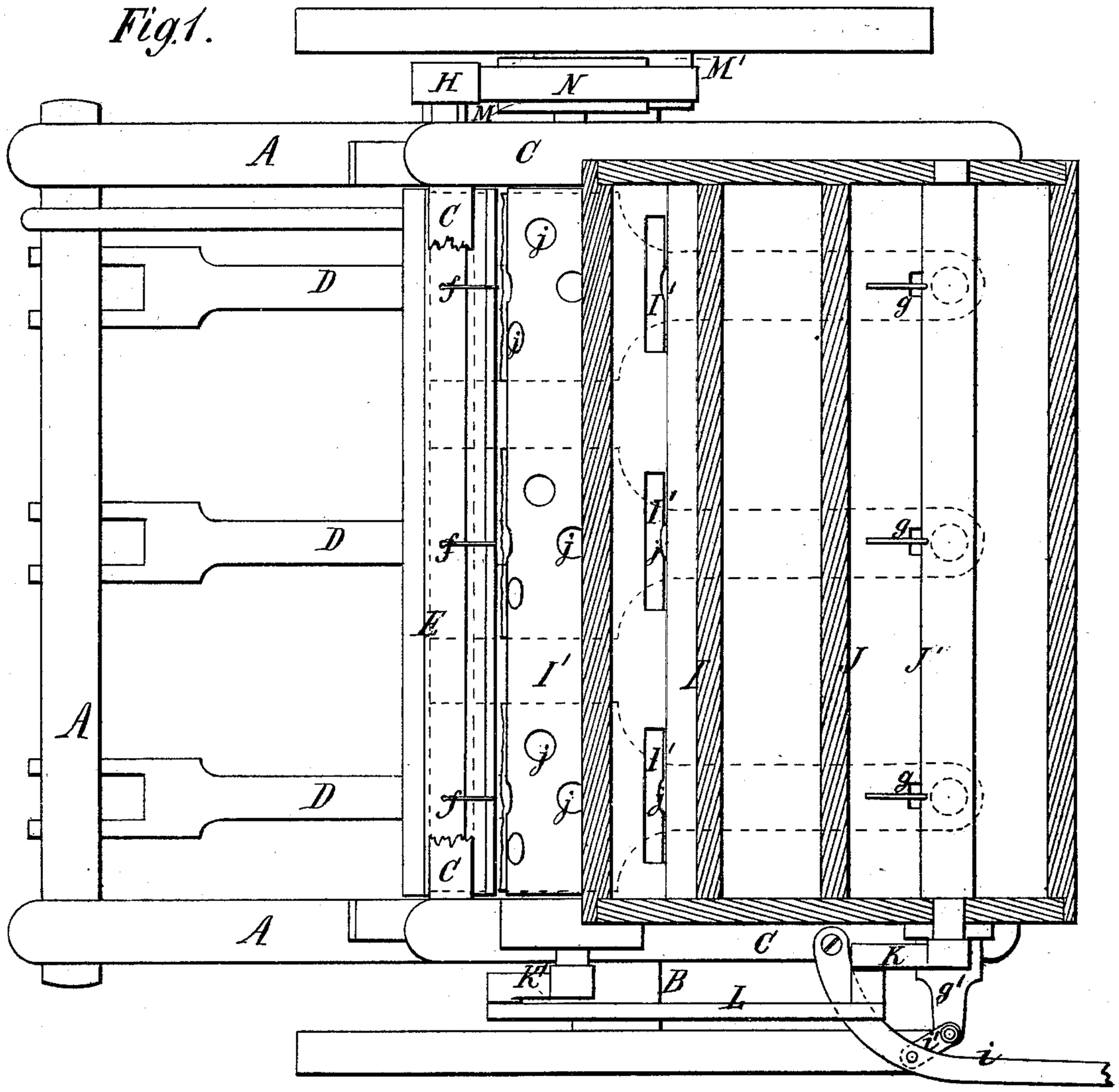
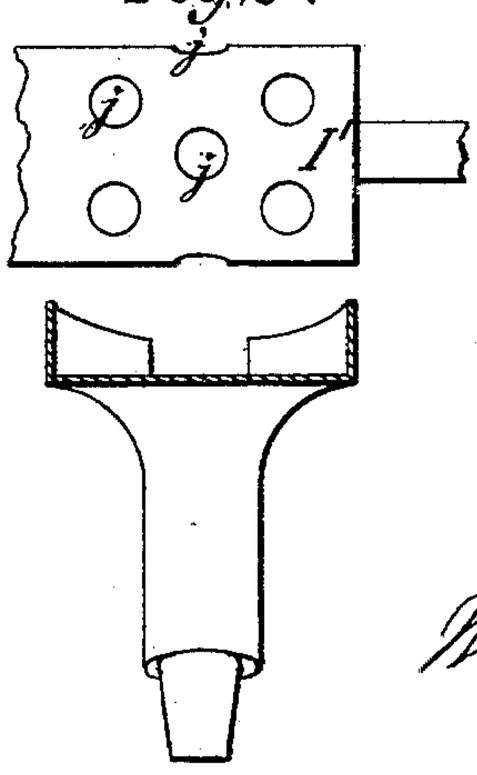


Fig. 2.



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J. Rupell Bard

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2 Sheets—Sheet 2.

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Fig. 3.

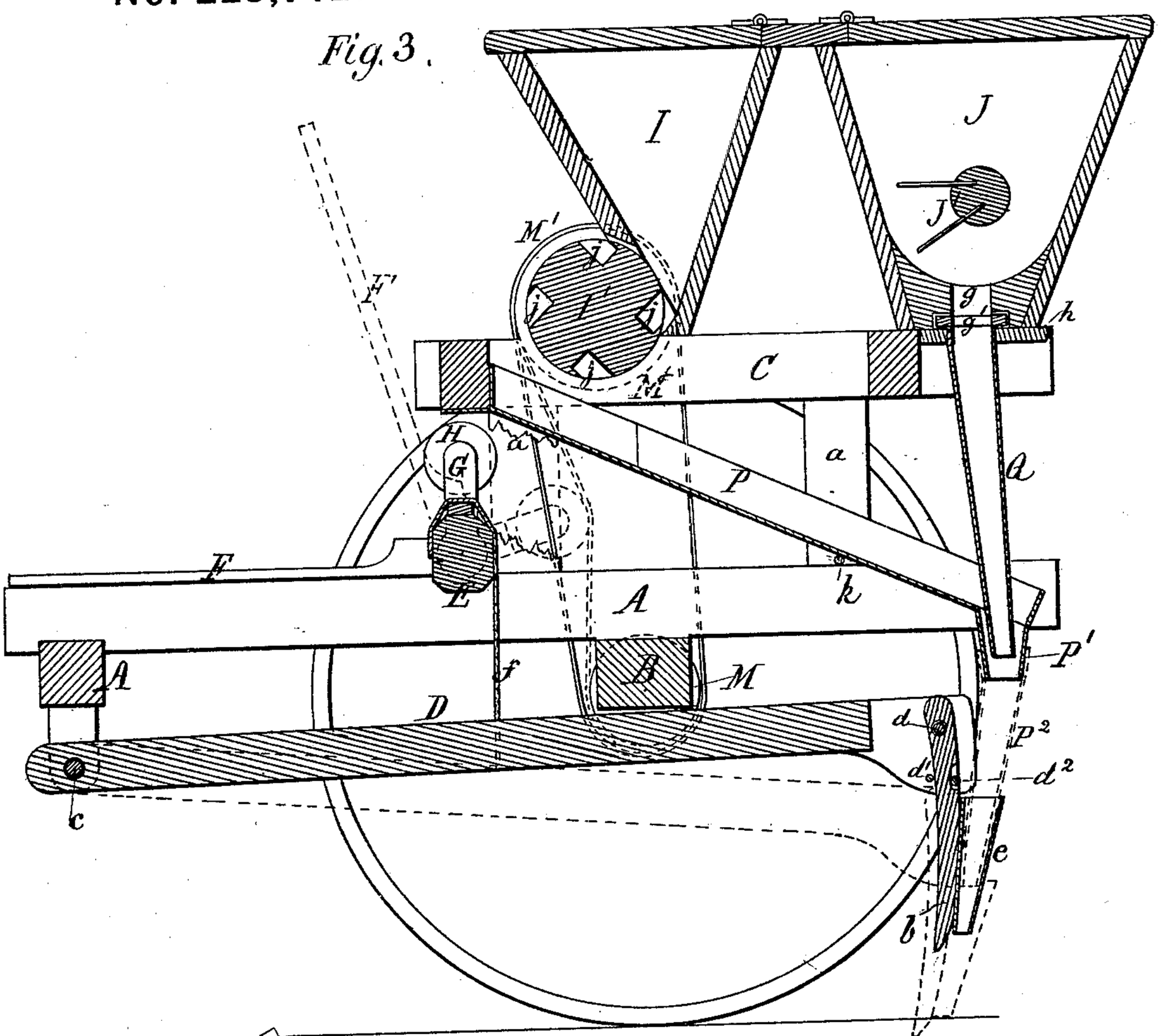
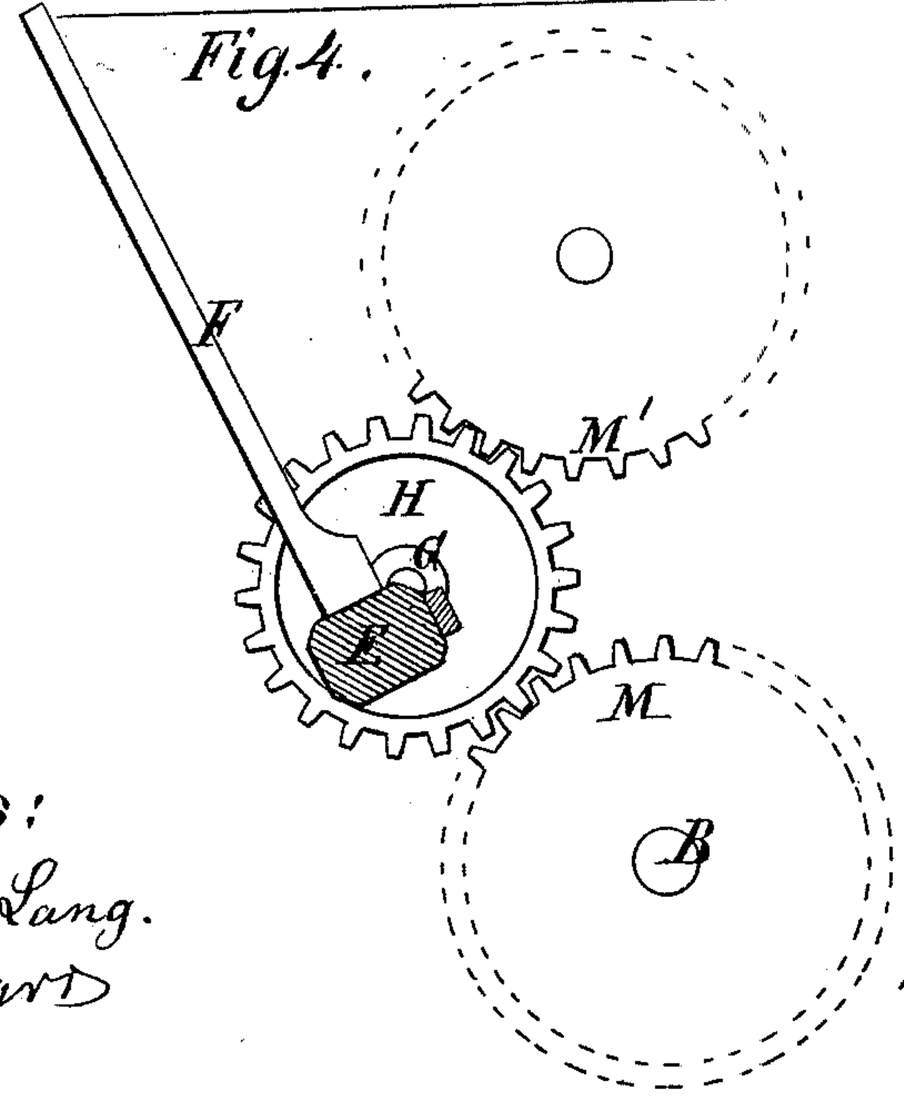


Fig. 4.



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UNITED STATES PATENT OFFICE.

BENJAMIN F. CARSON, OF MILLBROOK, TENNESSEE.

WHEAT-DRILL.

SPECIFICATION forming part of Letters Patent No. 225,742, dated March 23, 1880.

Application filed January 28, 1880.

To all whom it may concern:

Be it known that I, BENJAMIN F. CARSON, of Millbrook, in the county of Washington and State of Tennessee, have invented a new and useful Improvement in Wheat-Drills; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a top view of my improved drill, the hoppers being shown sectioned horizontally, and the front top rail or beam of the hopper-supporting frame partly broken away in order to expose the parts below it. The front ends of the grain conductors or chutes are also broken away, but the places they occupy are indicated by dotted lines. Fig. 2 is a detail section of one of the grain-chutes and an elevation of a portion of the wheat-planting roller. Fig. 3 is a vertical longitudinal section of the drill, the full black lines showing the hoes and other parts elevated out of operative position, and the dotted lines the same parts in operative position. Fig. 4 is a cross-section of the lifting-beam of the hoes, showing the lever which lifts the hoes and throws the wheat-cylinder and fertilizer-stirrer out of operation. In this view toothed gearing is substituted for the pulleys, belt, and idler shown in Figs. 1 and 3.

The object of my invention is to simplify the construction and afford greater convenience in the adjustment and management, as well as improve the operation, of wheat-drills.

The nature of my invention will be fully understood from the following description in connection with the annexed drawings.

A is an ordinary wheeled frame or carriage, with both of the wheels revolving on short arms of an axle, B. C is a supplemental frame of usual construction, mounted upon the side beams of the frame A by means of upright standards *a*. To the under side of the front beam of the frame A the hangers or handles D of hoes *b* are hung by means of a pivot-rod, *c*, passed through pendent supports of said front beam. To the rear ends of these hangers or handles the hoes *b* are attached by pivots *d*, and controlled below these pivots by metal and wooden pins d' d^2, the latter of which can break when the strain on the hoes is great enough to endanger the hoes. On the back of the hoes their tubes *e* are fastened, and while the points of the hoes open the drill-row the tubes serve for guiding the wheat-kernels into the same. The hoes are prevented from sidewise movement by side extension-jaws formed on the hangers, and between which the hoes can swing longitudinally before and after the pins d^2 break. The extent of such movement is limited by shoulders until the pins d^2 break.

The hangers D are, about midway of their length, provided with lifting-chains *f*, which pass upward and are fastened to an eccentric lifting beam or shaft, E, as shown in Fig. 3. The shaft E is pivoted to the frame A by means of half-boxes and short pivots, the pivots being on the ends of the beam or shaft E and the half-boxes placed over the pivots, which fit in half-bearings formed in the top of side beams of the frame A. This beam or shaft is provided with either a hand-lever, F, or a foot-treadle conveniently located with respect to the seat of the driver of the wheat-drill. By means of this lever the beam is turned partly around on its short pivots or journals, and the lifting straps or chains of the hangers are thereby caused to wind around the shaft E and elevate the hangers D and their hoes *b* from the position shown in dotted lines to the position shown in full lines in Fig. 3.

For the purpose of doing double duty with a single movement of the lever F, a crank-arm, G, having an idler, H, pivoted to it, is firmly fastened on one end of the shaft or beam E, and by means of this idler the flow of grain from the grain-hopper and the agitation of fertilizer in the hopper which contains, it can be stopped simultaneously with the raising of the hangers and their hoes, as will be seen from the following description. On the frame C a grain-hopper, I, with a wheat-distributing cylinder or roller, I′, in front of it, but intruding slightly into it at its V-shaped bottom portion, is placed. Behind this hopper I another hopper, J, to contain fertilizer, is placed, and in the same a vibrating stirrer, J′, is applied. This latter hopper has a concave instead of a V-shaped bottom like the wheat-hopper, and a series of holes, *g*, are extended through said

concave bottom. Beneath the holes, and upon a guide-board, *h*, a perforated regulating-slide, *g'*, to be operated by a hand-lever, *i*, and a link, *i'*, is fitted, as shown.

The distributing cylinder or roller I' is intended to revolve, while the stirrer J' is intended to vibrate, and for producing these movements simultaneously in the respective hoppers the following means are employed: K is a crank on one of the outer ends of the stirrer-shaft, and K' a shorter crank on one of the outer ends of the cylinder or roller I'. L is a pitman connecting the cranks K and K' together. M is a pulley on the other outer end of the cylinder I', and M' is a pulley on the inner face of one of the carriage-wheels of the drill.

N is an endless belt connecting the pulleys M and M' together. Just in front of the belt N the idler H is placed, and by forcing this idler from the position shown in full lines in Fig. 3 to the position shown in dotted lines in same figure the belt is caused to act with friction enough to revolve the cylinder I' when the carriage of the drill is moved forward. The revolution of the cylinder I' causes the short crank K' to revolve and the long crank K to vibrate, and by this means a rotary motion of the cylinder I' and a vibratory motion of the stirrer J' are produced.

The wheat-distributing cylinder I' has round holes *j* bored into it on tangential lines, and these holes are so arranged that they follow one another on diagonal or spiral lines. By this construction every cell separately takes its proper number of kernels of wheat and drops the same on a vertical line, and thus a very perfect distribution of the grain is insured and choking of the feed prevented.

In order to conduct the grain and fertilizer into the tubes *e*, and from thence into the ground, long inclined chutes P are provided below the two hoppers I and J, and from the hopper J tubes Q are extended and passed through short tubes P' at the rear ends of the chutes P, as shown; and from the short tubes P' leather boots may be extended, as indicated at P^2 by dotted lines, to the tubes *e*. The chutes P, at their forward ends and where the wheat-kernels fall first into them, are broad enough to catch the different deposits of the holes *j*, and from this broad portion they are reduced in width, so as to concentrate the grain and conduct it into the short tubes P' and outside of the fertilizer-conducting tubes Q. The short tubes P' are larger in diameter than the tubes Q, and owing to this the grain can fall into the boots P^2 while the fertilizer is passing into the same from the tubes Q. The chutes are supported at their front ends by means of brackets or flanges bolted to the front beam of frame C, and they are supported near their rear ends by a cross-rod, *k*, attached to the rear standards, *a*, and thus arranged these chutes are free to vibrate slightly up and down, and by so doing the grain will be caused to move more freely on their inclined bottoms.

In Fig. 4 the parts lettered M, M', and H are constructed with teeth on their peripheries, and the use of the belt N is dispensed with. In this plan the lever F will elevate the hangers D and hoes *b*, and at the same time throw the toothed wheel H out of gear with the power-wheel M, and, if necessary, out of gear with the driving-wheel M' of the roller I and stirrer J', and thus stop the feed from hopper I and the agitation of fertilizer in hopper J.

The operation of the idler H, Fig. 3, is the same as just described, except that it acts upon the belt N and causes said belt to revolve the roller I', and through said roller operate the stirrer J'.

In changing the amount of grain planted per acre, the pulley-gearing or toothed gearing will be changed, and for this purpose the machine will be provided with different sizes of pulleys or gears.

The lever F is to be so constructed and arranged that it may be operated either by hand or foot, and thus one man can manage the drill, using one hand or his foot for moving it and the other hand for guiding his team.

The conductors for the wheat and fertilizer are so arranged that the wheat is planted around or outside the fertilizer, and thus there is no liability of its choking occurring.

The hangers and hoes are placed low down, and by this means the grain will be planted more evenly on steep as well as level ground.

The hand-lever *i* is under the control of the driver, and he can move it in or outward, and thereby increase or decrease the amount of fertilizer discharged from hopper J.

The tangential set of the holes *j* in the roller I' causes a forced feed in uniform quantities, and at the same time the grain is not liable to be mashed, nor the machine likely to be clogged with trash.

Previous to my invention it was common to provide an agitator and a dropping-cylinder within a single upright hopper, and to employ the same upon a cotton-seed-planter frame. The operation of the agitator and the cylinder in the above machine was effected by a pitman and crank-pins, and one of the parts was vibrated while the other rotated. This arrangement differs from mine in that it does not combine with the cylinder, agitator, crank-arms, and pitman two independent hoppers, one of which can be shut off from the other by a slide. Besides this, my hoppers, cylinder, agitator, pitman, and crank-arms are arranged specially with reference to mechanism adapted for planting grain in drills, the whole machine being different from a cotton-seed-planting machine. It also has been common to employ two separate hoppers, but not in combination with a cylinder, vibrating agitator, two crank-arms, and a pitman, as shown in my drawings.

What I claim is—

1. The long and short cranks K and K′ and pitman L, in combination with the cylinder I′, arranged at the bottom of a hopper, I, and with the stirrer J′, arranged in a separate hopper, J, the said cylinder and its hopper and the said stirrer and its hopper being arranged as shown, and the whole operating substantially as described.

2. The lifting-shaft E, applied in front of the hopper I, and provided with the arm G, carrying the idler H, and also connected to the hangers D of the hoes *b*, and provided with the treadle-lever F, in combination with the gearing for operating the cylinder I and the stirrer J, all substantially as shown and described.

3. The hoes *b*, pivoted to the hangers D, as at *d d′ d²*, and provided with the short tubes *e*, in combination with the chutes P, arranged in an inclined position beneath the two hoppers I and J, and provided with the short tubes P′, and with the tubes Q and connecting flexible boot P², substantially in the manner and for the purpose described.

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