

No. 668,397.

Patented Feb. 19, 1901.

H. G. SWOPE & C. MOEHRING.

GRAIN DRILL.

(No Model.)

(Application filed Dec. 8, 1900.)

Fig. 1.

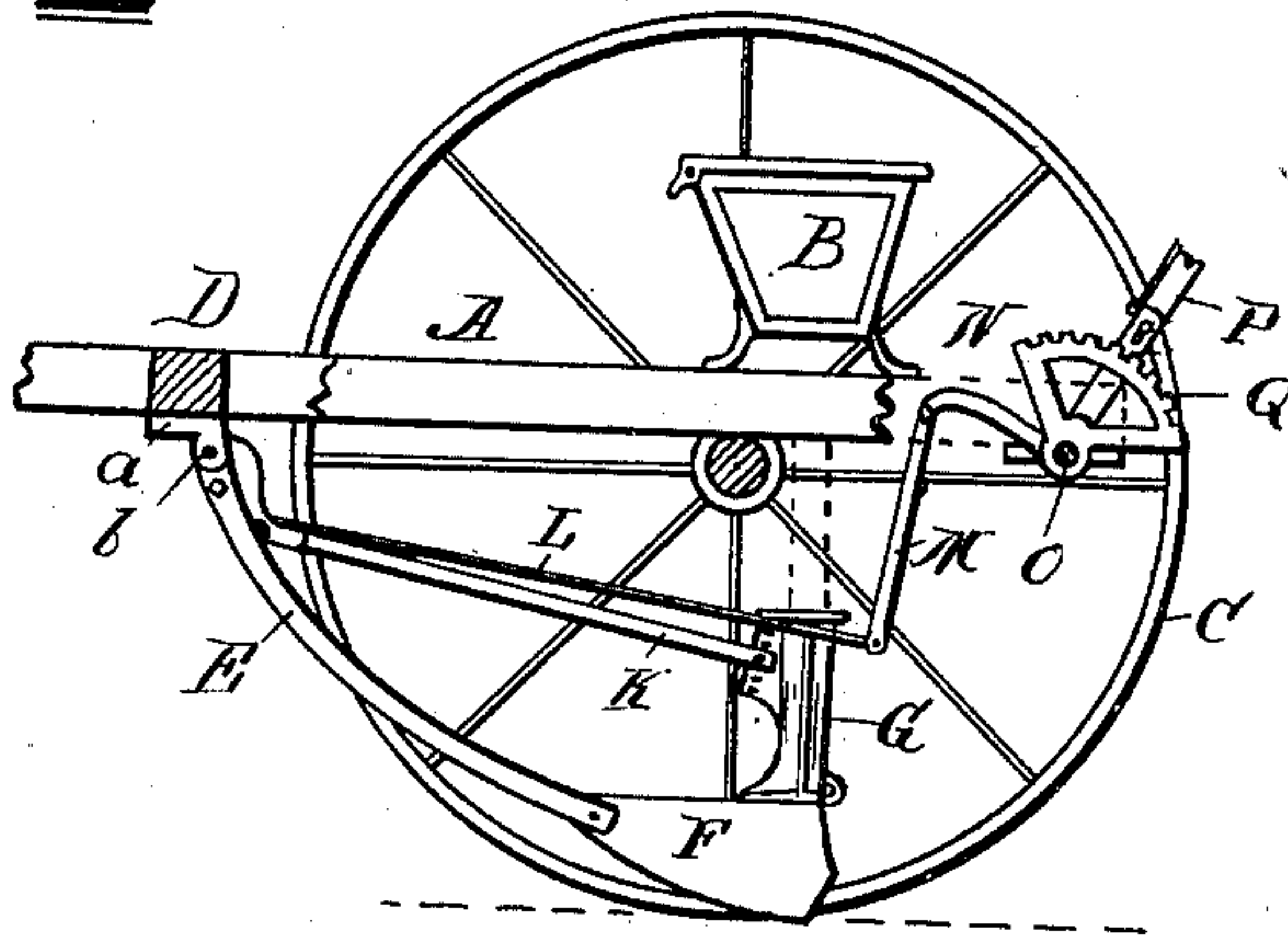


Fig. 2.

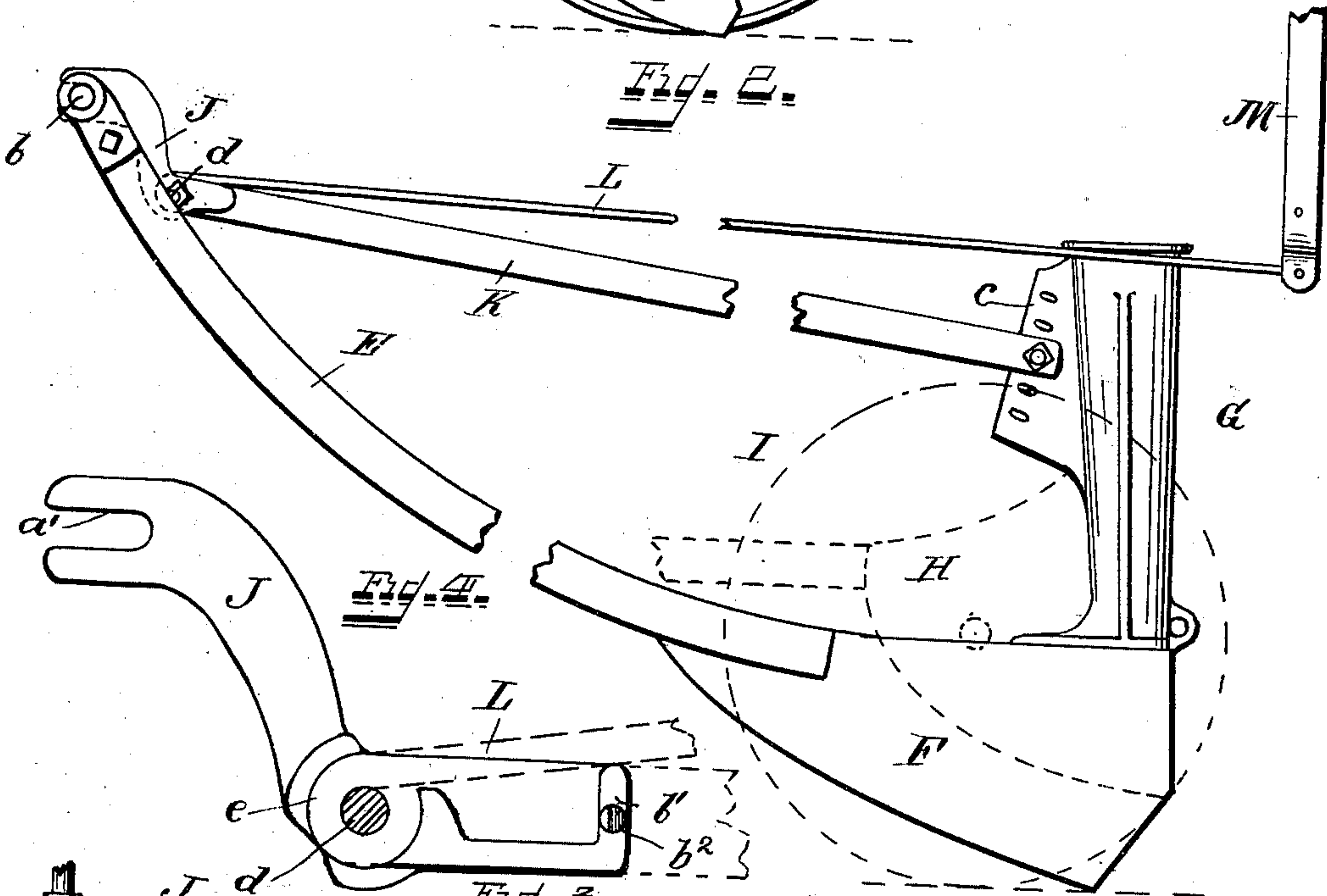
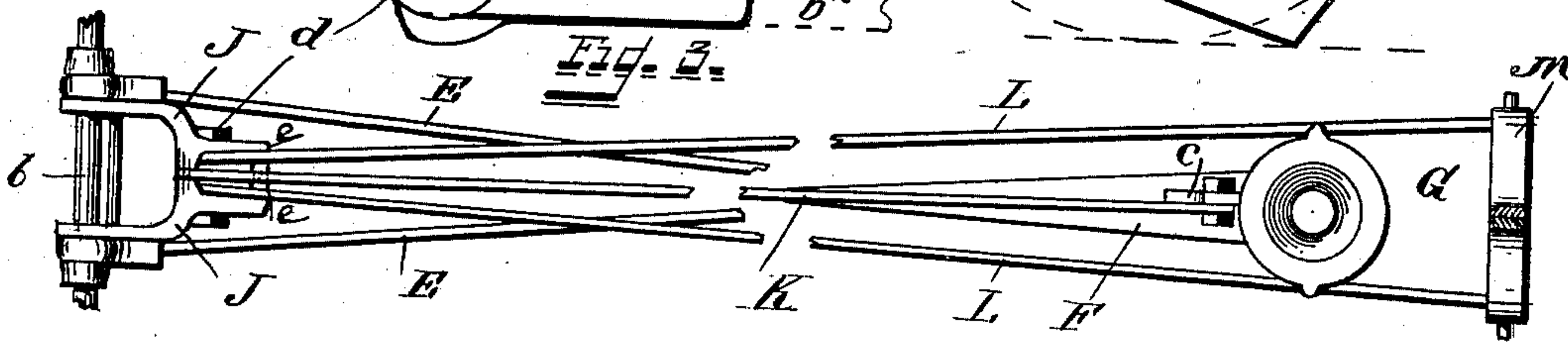


Fig. 3.



Witnesses.

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UNITED STATES PATENT OFFICE.

HORACE G. SWOPE, OF DAYTON, AND CHRIST MOEHRING, OF MIDDLETOWN, OHIO, ASSIGNORS TO THE MCSHERRY MANUFACTURING COMPANY, OF MIDDLETOWN, OHIO.

GRAIN-DRILL.

SPECIFICATION forming part of Letters Patent No. 668,397, dated February 19, 1901.

Application filed December 3, 1900. Serial No. 38,506. (No model.)

To all whom it may concern:

Be it known that we, HORACE G. SWOPE, residing at Dayton, in the county of Montgomery, and CHRIST MOEHRING, residing at Middletown, in the county of Butler, State of Ohio, citizens of the United States, have invented certain new and useful Improvements in Grain-Drills, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

Our invention relates to new and useful improvements in that class of grain-drills known as "shoe-drills," although it is applicable to another class of grain-drills known as "disk drills;" and it has for its object the provision of a simple and efficient means for exerting spring-pressure upon the shoes or disks to regulate the depth of the furrows under varied conditions of soil, as well as for giving the shoes or disks independent play in passing obstructions, and also for enabling the shoes or disks to be simultaneously raised from the ground in transporting the machine and to be simultaneously pressed into the ground to the required depth.

The novelty of our invention will be hereinafter more fully set forth, and specifically pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of a grain-drill, partly in section and with the rear wheel removed, embodying our invention. Fig. 2 is an enlarged broken side elevation of our improved spring-pressure and lifting mechanism as applied to the boot and runner of a shoe-drill. Fig. 3 is a plan view of Fig. 2. Fig. 4 is an enlarged detail side elevation of the forward connecting yoke-piece for the spring-rods and pressure-arm.

The same letters of reference are used to indicate identical parts in all the figures.

In Fig. 1, A represents the frame of a grain-drill carrying the seed-hopper B and supported on carrying-wheels C, all in the usual or any suitable manner.

Suitably pivoted to a transverse rod or bar D, carried by the main frame, and in this instance to bracket-supports *a*, are the forward ends of the double drag-bars E, whose rear convergent ends are bolted or riveted to the forward end of the shoe or runner F, which

in turn carries upon its rear end the vertical boot G, which receives the grain from the hopper B and delivers it to the ground between the heels of the runner, all in the usual or any suitable manner. As shown by the dotted lines in Fig. 2, the drag-bars E may be connected at their rear ends to an extension H of the boot G, to which extension is pivoted a furrow-opening disk I in place of the shoe or runner F where it is desired to employ our invention in disk drills. Pivoted or hung between the forward ends of the drag-bars in any suitable manner (in this instance upon the same bolt *b* which pivots the drag-bars to the bar D) is a rearwardly-extending and downwardly-curved forked piece J, to which is rigidly secured in any suitable manner the forward end of a rigid bar K, which extends back and has its rear end suitably secured to the boot G. It is preferably pivoted at its rear end through one of a series of adjusting-holes in a bracket *c*, projecting from the forward side of the boot near its upper end. Two spring-metal rods L have their forward ends secured to the piece J, preferably by means of eyes, through which a bolt *d* in the piece J is passed, and these eyed ends of the spring-metal rods and the forward end of the bar K are preferably confined in a socket *e* in the piece J. The rear ends of the spring-metal rods diverge and pass on each side of the boot G at or near its top, and they may engage with lips or a flange at the top edge of the boot for the purpose of lifting the runner from the ground when the rear ends of the rods L are raised. Pivoted to the rear ends of the rods L in rear of the boots are the lower ends of links M, Fig. 1, whose upper ends are pivoted to crank-arms N, fast on a rock-shaft O, which is locked by a hand lock-lever P, engaging a segment-rack Q, to hold the rock-shaft in any of its adjusted positions.

It will be readily understood from the foregoing description that when the shaft O is rocked forward the rear ends of the spring-metal rods L are pressed downward and pressure is exerted downward upon the bar K, which pressure is transmitted directly to the boot G to force the runners into the ground to the depth required without applying any pressure whatever to the drag-bars, whose rear

ends merely follow the runner, and which drag-bars perform the sole office of uniting the runners to the frame and drawing them forward. By changing the pivot-point of the rear ends of the bars K the initial tension of the springs L is regulated, as will be readily understood, and we are thus enabled to put spring-pressure to any extent desired upon all of the shoes or disks to cause the same to enter the earth to the required distance under varying conditions of the soil, while at the same time each shoe or disk can rise independently of the others in passing over stones or other obstructions and will at once be forced back after passing such obstructions to proper working position in the soil. The backward rocking of the shaft O will lift all of the shoes or disks bodily from the ground in transporting the machine from place to place, either by the engagement of the spring-metal rods with the lips or flanges at the tops of the boots or, where these are omitted and the connections of the forward ends of the spring-metal rods with the pieces J are rigid, by the direct action of said springs on the bars K.

It is only a matter of convenience in hanging the forward end of the piece J to the same bolt *b* which pivots the drag-bars to the cross-bar D, for the same result would be accomplished in the same way were the forward end of the piece J hung to any other fixed pivotal point either on the drag-bars themselves or on the frame of the machine, provided this pivotal point was near the pivotal point of the drag-bars, as will be readily understood.

As seen in Fig. 4, the forked piece J has slots *a'* at the forward ends of its forks, by which it is hung on the bolt *b*, so as to give it limited play backward and forward in the adjustment of its rear end without interfering in the least with its function as a fulcrum on the bolt *b*, while at the same time it will be seen that the pressure-bar K can in no wise act as an assistant to the drag-bars E in drawing forward the furrow-openers or boots. It will also be noticed by reference to Fig. 4 that the spring-metal rods L while hung on the bolt *d* rest on walls *b'* in the socket *e* of the forked piece J, and thereby are enabled to exert a downward pressure on the bar K when their rear ends are depressed, teats or lugs *b²* being formed on the adjacent sides of the walls *b'*, which enter a perforation in the pressure-bar K to lock the latter rigidly to the forked piece J.

Having thus fully described our invention, we claim—

1. In a grain-drill, the combination of a drag-bar pivoted at its forward end to the frame of the machine, a furrow-opener and boot carried by said drag-bar, a rigid arm secured at its rear end to the boot and hung at its forward end to a fixed pivot, a spring-rod secured to the rigid arm near its forward end in such manner that downward pressure on the

rigid arm and boot, and means for raising and depressing the rear end of the spring-rod, substantially as described.

2. In a grain-drill, the combination of a drag-bar pivoted at its forward end to the frame of the machine, a furrow-opener and boot carried by said drag-bar, a rigid arm adjustably secured at its rear end to the boot and hung at its forward end to a fixed pivot, a spring-rod secured to the rigid arm near its forward end in such manner that downward pressure on the spring-rod causes downward pressure on the rigid arm and boot, and means for raising and depressing the rear end of the spring-rod, substantially as described.

3. In a grain-drill, the combination of a drag-bar pivoted at its forward end to the frame of the machine, a furrow-opener and boot carried by said drag-bar, a rigid arm secured at its rear end to the boot and hung at its forward end to a fixed pivot, a pair of spring-metal rods secured to the rigid arm near its forward end and extending rearwardly on each side of the boot in such manner that downward pressure on said spring-metal rod causes downward pressure on the rigid arm and boot, and means for raising and depressing the rear ends of the spring-metal rods, substantially as described.

4. In a grain-drill, the combination of a drag-bar, a boot and furrow-opener carried thereby, a rigid arm secured at its rear end to the boot and loosely hung at its forward end upon a fixed pivot, a pair of spring-metal rods suitably attached to the rigid arm near its forward end, and means for raising and depressing the rear ends of the spring-metal rods, substantially as described.

5. In a grain-drill, the combination of a drag-bar forked at its forward end and pivoted to the frame of the machine, a boot and furrow-opener carried thereby, a rigid arm secured at its rear end to the boot and at its forward end to a forked socket-piece loosely hung at its forward end upon a fixed pivot, a pair of spring-metal rods having their forward ends secured in the socket of the forked piece, and means for raising and depressing the rear ends of the spring-metal rods, substantially as described.

6. In a grain-drill, the combination of the boot G, drag-bar E, pressure-bar K, spring-metal rods L, and the two-part forked piece J provided with sockets for holding the forward ends of the spring-metal rods and the pressure-bar K and also provided with interlocking pins *b²* engaging an aperture in the pressure-bar, substantially as described.

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