

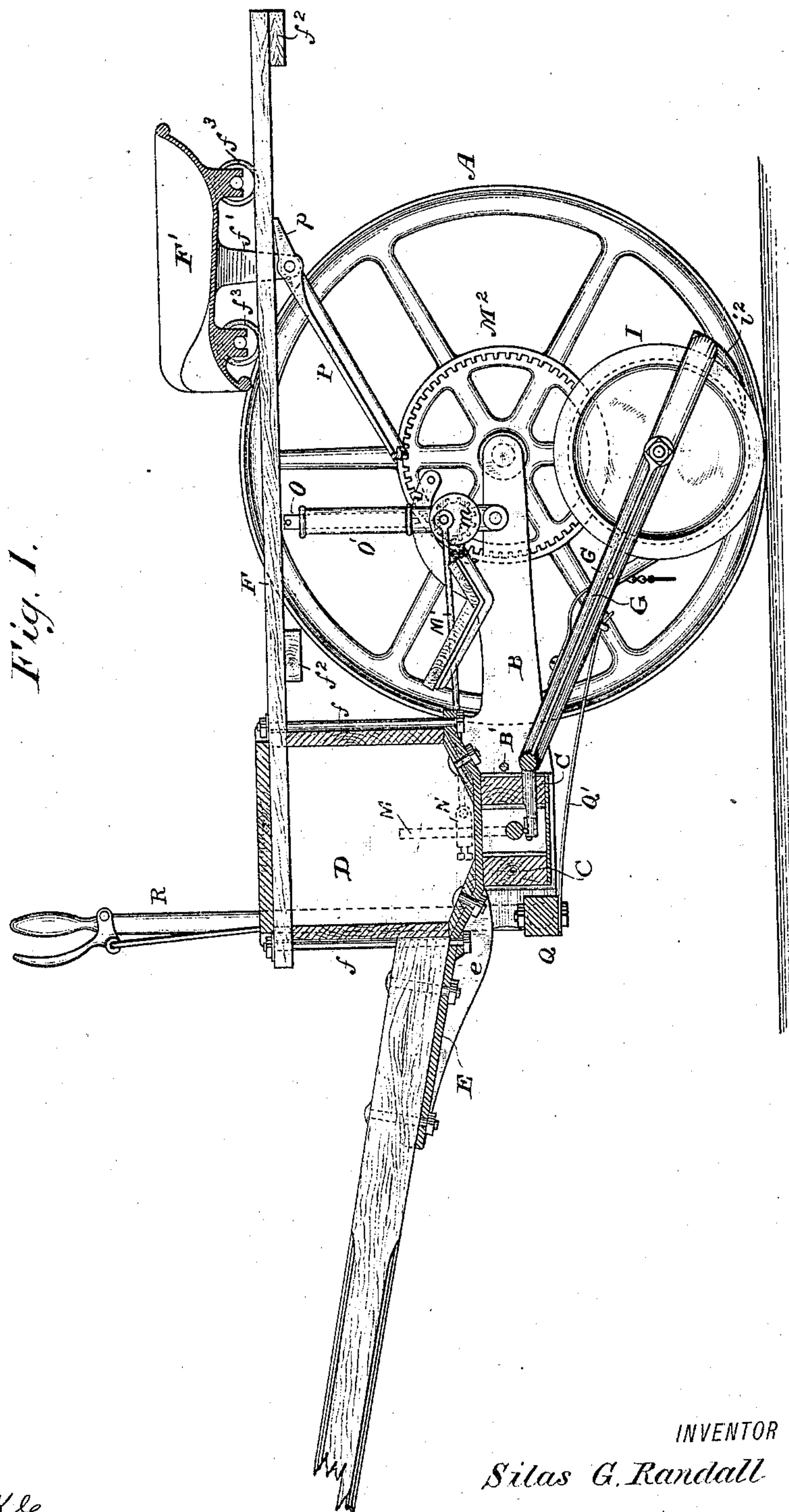
(No Model.)

3 Sheets—Sheet 1.

S. G. RANDALL.
SEEDING MACHINE.

No. 284,060.

Patented Aug. 28, 1883.



WITNESSES

Wm A Skunk
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(No Model.)

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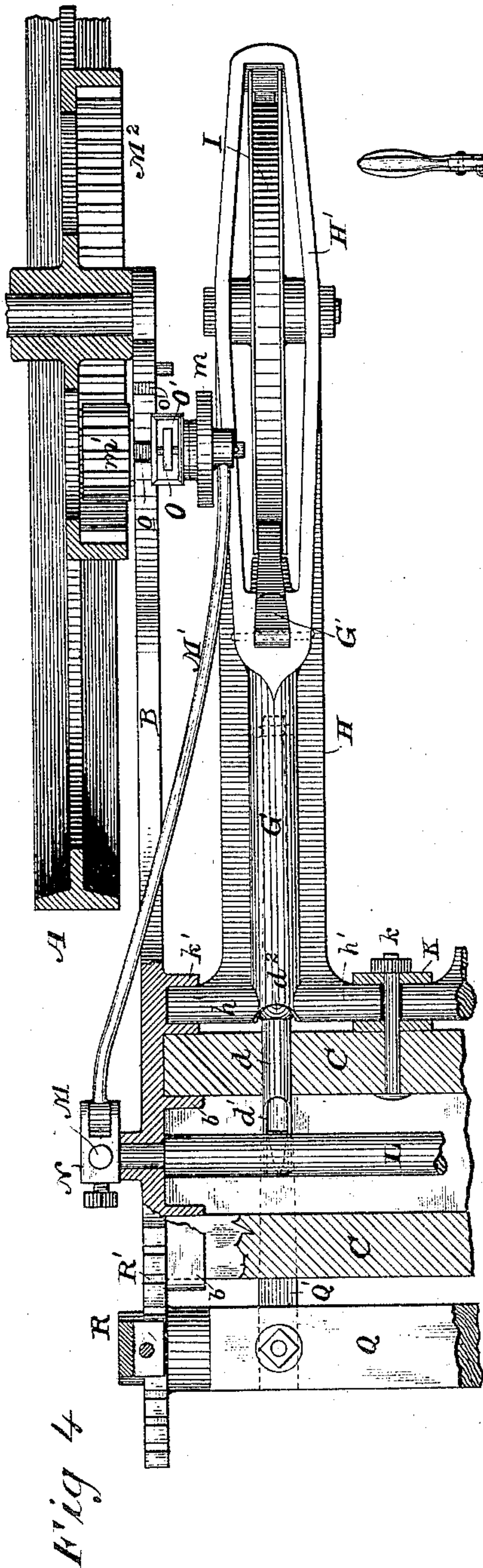


Fig. 4

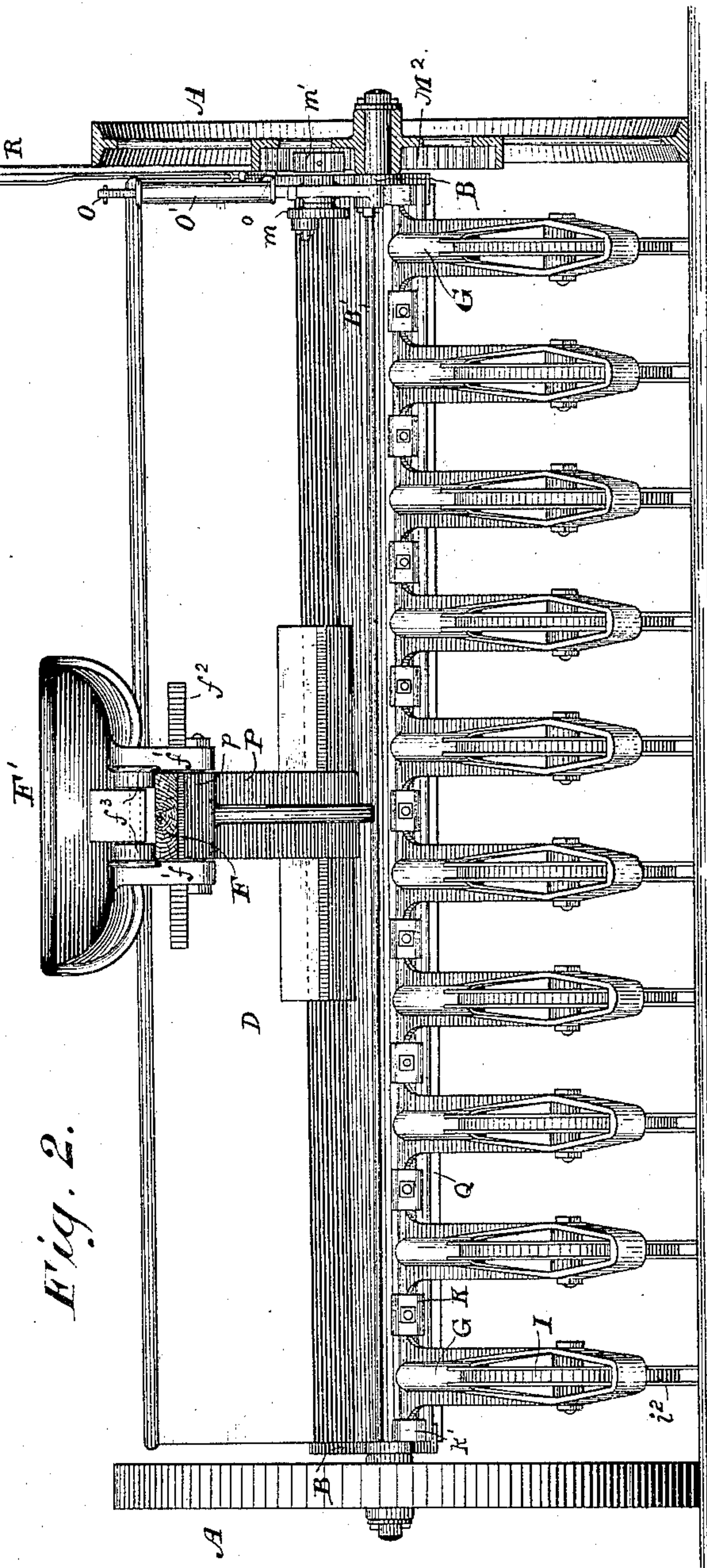


Fig. 2.

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(No Model.)

3 Sheets—Sheet 3.

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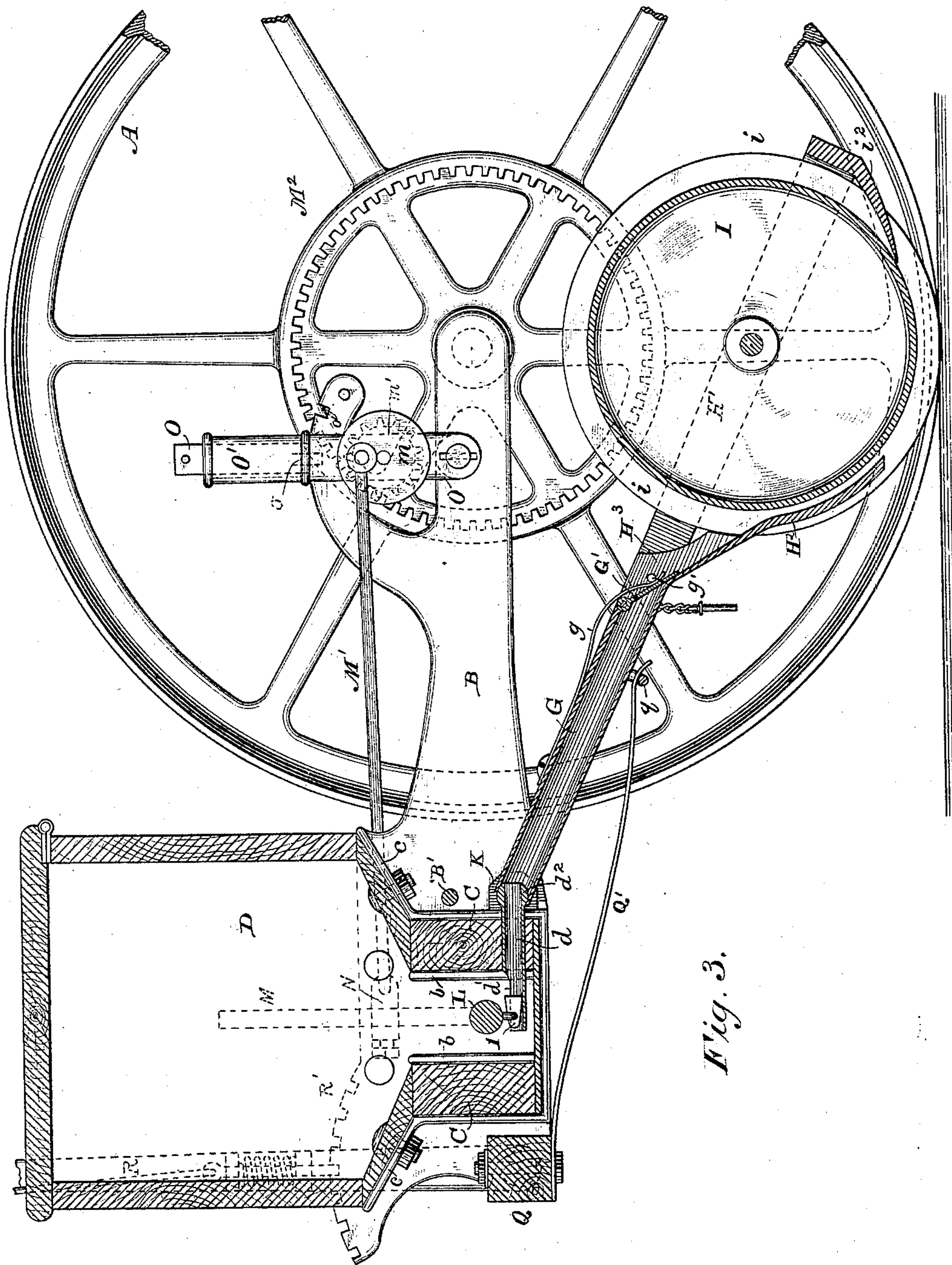


Fig. 3.

WITNESSES

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UNITED STATES PATENT OFFICE.

SILAS G. RANDALL, OF GREENE, NEW YORK, ASSIGNOR TO AMELIA A. RANDALL, OF SAME PLACE.

SEEDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 284,060, dated August 28, 1833.

Application filed July 14, 1832. (No model.)

To all whom it may concern:

Be it known that I, SILAS G. RANDALL, of Greene, in the county of Chenango and State of New York, have invented certain new and useful Improvements in Seeding-Machines, of which the following is a specification.

The primary objects of my invention are—

First. To provide a practical and efficient machine in which the ordinary drill-teeth or grain-spouts are dispensed with and the grain pressed into the earth by rotating wheels. By such a construction any rubbish or weeds encountered by the machine in its traverse over the fields will be run down and cut up by the grain-wheels, and cannot accumulate upon the seeding parts of the machine.

Second. To provide a seed-sowing conduit or conveyer in which the downwardly-moving face or periphery of a rotating seed-wheel forms one of the walls.

Third. To provide an improved force-feed, which, while feeding the seed positively, keeps it under tension by means of a check and delivers it to the grain-wheels in the most advantageous manner.

Fourth. To provide an organization by which the weight of the machine may be thrown more or less upon the grain-wheels which press the seed into the earth.

My invention therefore consists in certain improved organizations for accomplishing the above objects, and in other and further improvements, which will be fully set forth hereinafter.

In the accompanying drawings, Figure 1 is a vertical section; Fig. 2, a rear elevation; Fig. 3, a detail sectional view on a larger scale, showing the seed-feeding mechanism; and Fig. 4 is a detail plan view, partly in section, showing the driving-wheel and the adjoining grain-wheel and its connections.

Two main carrying and supporting wheels, A A, turn loosely upon the main axle. On each end of the axle, just within the supporting-wheels, frame-pieces B B, preferably cast, are mounted, and project toward the front of the machine. These side pieces are united at their forward ends by a tie-rod, B', and by cross-beams C C, which fit into sockets or between

flanges b, cast on the frame-pieces, as shown more especially in Fig. 4. The cross-beams C C form the sides of the lower portion of the seed-box D, and the upper and enlarged portion of the seed-box is supported upon them, the parts being bolted together and secured by suitable straps or angle-irons, c. The angular tongue-casting E, which is formed with a flange or web, e, to give it proper strength, passes between the upper and lower portions of the seed-box, and is securely bolted there-to, as clearly shown in Fig. 1. The rear end of the tongue abuts against the side of the seed-box, and is bolted to the tongue-casting. A seat-supporting beam, F, rests in steps or notches formed in the upper edges of the seed-box, and projects rearwardly over the machine. This beam is securely held by bolts f, which pass through the beam and tongue-casting, as seen in Fig. 1, the bolts also serving to bind the parts firmly together. The mere details of the construction and fastenings of the seed-box, tongue, and seat-supporting beam will be readily understood by those familiar with such matters. A series of tubes, d, are placed in the rear cross-beam, C. The tops of the portions of the tubes within the seed-box are cut off, so as to form open-faced tubes at d', while the ends projecting beyond the cross-beam are ball-shaped to form bearings and points of connection for the grain-tubes G and give a flexing connection between them. These grain-tubes are formed or carried in frames or castings H, in the open or forked ends H' of which the grain-wheels I have their bearings, and terminate at the inner ends of the forks or openings in the frames or castings opposite the faces of the grain-wheels, as clearly illustrated in Fig. 3. The upper end of each frame or casting is formed with trunnions h', which have suitable bearings in socket or journal pieces K, which are secured to the rear cross-beam, C, by bolts k, as illustrated in Fig. 4, the outer trunnion of each casting next to the driving-wheels having its bearing in a socket, k', formed in the frame-piece B. With the castings in place, the ball-bearings d' of the tubes d fit snugly in the mouths of the grain-tubes G, forming a flexing joint. It will thus be seen

that the castings H, with the grain-wheels, may rise and fall freely on their bearings h' and d^2 without interfering with the feed of the grain. The grain-wheels are preferably formed with flanges i on each side, so as to give the wheels a comparatively deep groove in their peripheries. Each casting H is formed with a downwardly-projecting guide, H^2 , which extends from the seed-tube G into the groove in the periphery of the grain-wheel in proper proximity to the bottom of the groove, and then for a suitable distance is curved concentrically with the face of the wheel, as clearly illustrated in Fig. 3. On each side of this guide-piece are vertical flanges H^3 , which terminate opposite the edges of the flanges i on the grain-wheels, and in close proximity thereto. This construction provides a trough or guide for the grain from the tube G into the grooved face or periphery of the grain-wheel, so that the grain will be conveyed and delivered near the bottom of the wheel. It will be observed that the face of the wheel forms a portion or wall of this conveyer. Further than this, it should be noted that the periphery or face of the wheel is constantly moving downward toward the earth as the machine travels over the field. This moving wall of the conveyer insures a more free and perfect feed of the seed than could otherwise be obtained, and permits the conveyer to be made of smaller sections, and also enables me to use a grain-wheel with a very narrow tread, so that the available weight in a machine of this character will be sufficient to press the grain-wheels firmly into the earth, so as to deposit the seed at a proper depth. This pressure on the wheels may be varied to suit the condition of the soil and any other attendant conditions or circumstances.

So far as I am aware, I am the first to produce a seeder operating in the manner above set forth. Of course the details of the construction may be varied without departing from the essence of the invention.

A scraper or cleaner, i^2 , on the end of each of the frames or castings fits snugly in the groove in the grain-wheel and keeps it free of earth and clogging matter. The portion of the guide H^2 which is curved to conform to the bottom of the groove or face of the wheel is preferably within the flanges i of the wheel, so that in traversing the field any rubbish or debris met by the machine will be run down by the flanges, and will not accumulate upon the guide H^2 . At the end of the opening of the grain-tube G opposite the face of the grain-wheel a lid or clapper, G' , is hinged, and is normally kept closed under tension, preferably by a spring, g . This lid may be permanently and rigidly closed by means of a locking-pin which passes through apertures g' in the guide-flanges H^3 . Part of the grain-tubes may thus be securely locked when the machine is being used to sow narrow strips and irregular spaces in finishing off.

In the bottom of the grain-box a rock-shaft, L, has its bearings. This shaft carries on its under side a series of plungers, l , which fit and oscillate in the open ends of the tubes d , so that when the shaft L is rocked and the plugs or plungers l are thrown back and forth the grain will be forced or pumped through the tubes d to the grain tubes and wheels. The rock-shaft L is actuated in the following manner: At one end an upright rod, M, is secured to the shaft L, and is rocked back and forth by means of a pitman, M' , driven by a crank-wheel, m , operated by a pinion, m' , which is rotated by an internally-gearred ring, M^2 , on one of the carrying-wheels. In order to provide for varying ranges of motion or different thrusts of the plungers l , the pitman M' may be adjusted vertically on the upright rod M by means of its connecting-block N and set-screw, which will be clearly understood upon reference to Figs. 4 and 3. The crank-wheel m and pinion m' are carried by and have their bearings on a vertical bar, O, which rocks on a pivot on the frame-piece B. The upper portion of the bar O is reduced, and is provided with a sliding collar, O' . This collar has a lug or catch, o , which projects somewhat to one side and engages in notches o' in the curved arm O^2 of the frame-piece B. The gear-wheel may be therefore thrown into or out of gear with the driving-ring M^2 by raising the collar and throwing the bar O either forward or back, the bar being locked in either position by the engagement of the lug o in a notch, o' .

The seat F' is provided with rollers f^3 , so that it may travel back and forth on the seat-supporting beam F. The foot-rest P is pivoted just beneath the beam F in two lugs, f' , depending from the seat, and is prolonged somewhat beyond its pivot, so as to form a clamping or locking jaw, p , by which the seat will be locked in any desired position. This is clearly illustrated in Fig. 1, where it will be seen that by releasing the pressure on the foot-support the seat may be pushed back and forth on the beam F, and may readily be locked in any desired position thereon by pressing upon the foot-rest. Blocks f^2 on the under face of the seat-supporting beam limit the movement of the seat and prevent its accidental displacement. By means of this traveling seat the driver may move himself back and forth on the machine to reach the various parts, and may place his weight at any desired point thereon.

A rock-shaft, Q, is pivoted between the front ends of the frame-pieces B. Springs Q' , secured on the under face of the rock-shaft, extend backward and engage in loops q on the under faces of the castings H. A lever, R, provided with a detent, is secured upon one end of the rock-shaft, and is held in any desired position by a rack, R' . The driver, by operating this lever, may depress or elevate the springs Q' , and thereby throw more or less weight upon the grain-wheels, as may be de-

sired. As above mentioned, this operation is desirable to meet varying conditions under which the machine works. Under certain circumstances more weight will obviously be required at one time than at another to place the seed at the proper depth.

Many of the details of the construction and organization above described may be changed without departing from the principles of my invention. For instance, instead of having a spring arm or lever extend from the rock-shaft Q to each grain-wheel frame or casting, the gang of grain-wheels might be connected by a cross-bar or frame, and that bar be connected with the rock-shaft. Other changes will of course readily be suggested to those skilled in this class of machines.

In operation the seed from the box is forced or pumped into the tubes *d*, through the tubes G and guides H² into the grooves in the grain-wheels, is deposited under the tread of the wheels, and is by them pressed firmly into the soil. At each stroke of the plungers in the seed-box the seed, being positively driven through the tubes, as above described, overcomes for the moment the tension of the check-valves or clappers, which, however, promptly cut off the supply of seed when the thrust of the plungers has ceased, and the seed is therefore deposited in distinct quantities by distinct series of impulses. By this arrangement the seed is deposited in the most advantageous manner. By adjusting the pitman-coupling N on the vertical shaft M the rapidity and length of the strokes of the plungers may be increased to such a degree as to deliver the seed in a practically-continuous stream, or may be so decreased as to deliver the seed in a series of distinct quantities. As the machine moves over the field each grain-wheel acts independently to deposit the seed in the soil and firmly press it therein, and each wheel is free to rise independently against the tension of a spring. My improved seed-feeding mechanism insures the regular and uniform feed of the seed, no matter at what angle the machine may be placed in traversing over undulations or up and down inclinations on the surface of the ground.

I am aware that in the patent of Hiram Moore, No. 31,819, granted March 26, 1861, a machine is shown in which, by means of a lever-and-link connection, more or less weight can be thrown upon cutting blades or edges on the ends of a series of grain-tubes. I am also aware that in the patent of J. D. Smith, No. 35,713, granted June 24, 1862, a series of cutters carried on the ends of cutter-arms are normally pressed into the earth by means of a series of springs, which serve to connect the cutter-beams with the frame. I therefore make no claim to such organizations.

I am aware that the patent of Willis, No. 7,044, of January 22, 1850, shows a seed-planter in which a flanged grain-wheel is employed in connection with a shield which directs the

seed into the flanged face of the wheel at a point at or about the horizontal plane of the axis of the wheel, and with a plow which precedes the wheel.

The right to hereafter file other applications for any subject-matter herein set forth, but not claimed or fully claimed, is reserved.

I claim as my invention—

1. In a seeding-machine, the combination, substantially as set forth, of a series of seed-wheels which press the seed into the earth, and first meet the earth or any obstructions in the traverse of the machine over the field, with seed distributing or discharging devices which deliver the seed under the tread of the wheel.

2. The combination of a pivoted or vertically-vibrating grain-wheel-supporting arm, a grain-wheel mounted in bearings therein, and a conductor or conveyer attached thereto to discharge the seed for the tread of the wheel to press it into the soil, substantially as set forth.

3. The combination, with a flanged or grooved grain-wheel, of a seed-conveyer which discharges the seed within the grooved or flanged face of the wheel and under the front lower quarter thereof.

4. The combination, substantially as set forth, of a seed conduit or conveyer with a seed-wheel which forms a portion of the conveyer and presses the seed into the earth.

5. The combination, substantially as set forth, of a seed-tube, a grain-wheel to press the seed into the earth, and a guide or conveyer, of which the seed-wheel forms a side or wall, which conveyer delivers the seed under the tread of the wheel.

6. The combination, substantially as set forth, of the flanged or grooved grain-wheel, the grain-tube, and the guideway which delivers the grain under the wheel.

7. The combination, substantially as set forth, of the flanged or grooved grain-wheel, the grain-tube, the guide which extends within the groove of the wheel, as described, and delivers the grain under the wheel, and the scraper for keeping the groove clear.

8. The combination, substantially as set forth, of the seed-box, the series of tubes *d*, the series of frames or castings carrying or having grain-tubes and grain-wheels, the guides for directing the grain under the wheels, and seed-feeding devices.

9. The combination, substantially as set forth, of forcing mechanism and a yielding check device acting on the feed, for the purpose set forth.

10. The combination, substantially as set forth, of the seed-box, the rock-shaft and plungers, the seed-discharging tubes, and the check-springs which close the discharge ends of the tubes.

11. The combination, substantially as set forth, of the seed-box, the rock-shaft therein, the plungers carried by the rock-shaft, the

open-faced grain-discharging tubes in which the plungers work, and means for vibrating the rock-shaft.

12. The combination, substantially as set forth, of the seed-box, the rock-shaft, the plungers carried by the rock-shaft, the grain-discharging tubes in which the plungers work, the upright rod M on the rock-shaft, the pitman M', and the adjustable coupling N, between the upright rod and pitman, for the purpose set forth.

13. The independent grain-wheel frame herein described, having a grain-tube or seed-conveyer, in combination with a grain-wheel mounted in bearings in the frame, the tube terminating opposite the periphery of the wheel.

14. The combination, substantially as set forth, of a seed-feeding tube in or on a seed box or receptacle, a seed-conveying tube, which delivers the seed to the earth, rocking or rising and falling on a hinge-connection or pivot, and a flexible connection or joint between the two tubes.

15. The combination, substantially as set forth, of the seed-box, a series of seed-tubes therein, a series of seed-conveying tubes rocking on bearings, flexing joints between said series of tubes, and a seed-wheel for each seed-conveying tube moving therewith.

16. The combination, substantially as set forth, of a frame, seed-feeding devices, a series of grain-wheels which press the seed into the earth, and mechanism for varying the weight thrown upon said wheels, for the purpose set forth.

17. The combination, substantially as set forth, of the main frame, a series of frames carrying grain-wheels pivoted on the frame, a series of bearing-springs which tend to force the grain-wheels into the earth, and a lever for throwing more or less weight upon said wheels.

18. The combination, substantially as set forth, of the main frame, a series of frames carrying grain-wheels pivoted on the frame, and a series of bearing-springs which tend to force the grain-wheels into the earth.

19. The combination, substantially as set forth, of the seat-supporting beam, the seat having rollers which run on the beam, the foot-rest pivoted in lugs depending from the seat, and the clamping or locking end of the foot-rest.

In testimony whereof I have hereunto subscribed my name this 13th day of July, 1882.

SILAS G. RANDALL.

Witnesses:

CHAS. W. GRAY,
J. E. JULIAND.