

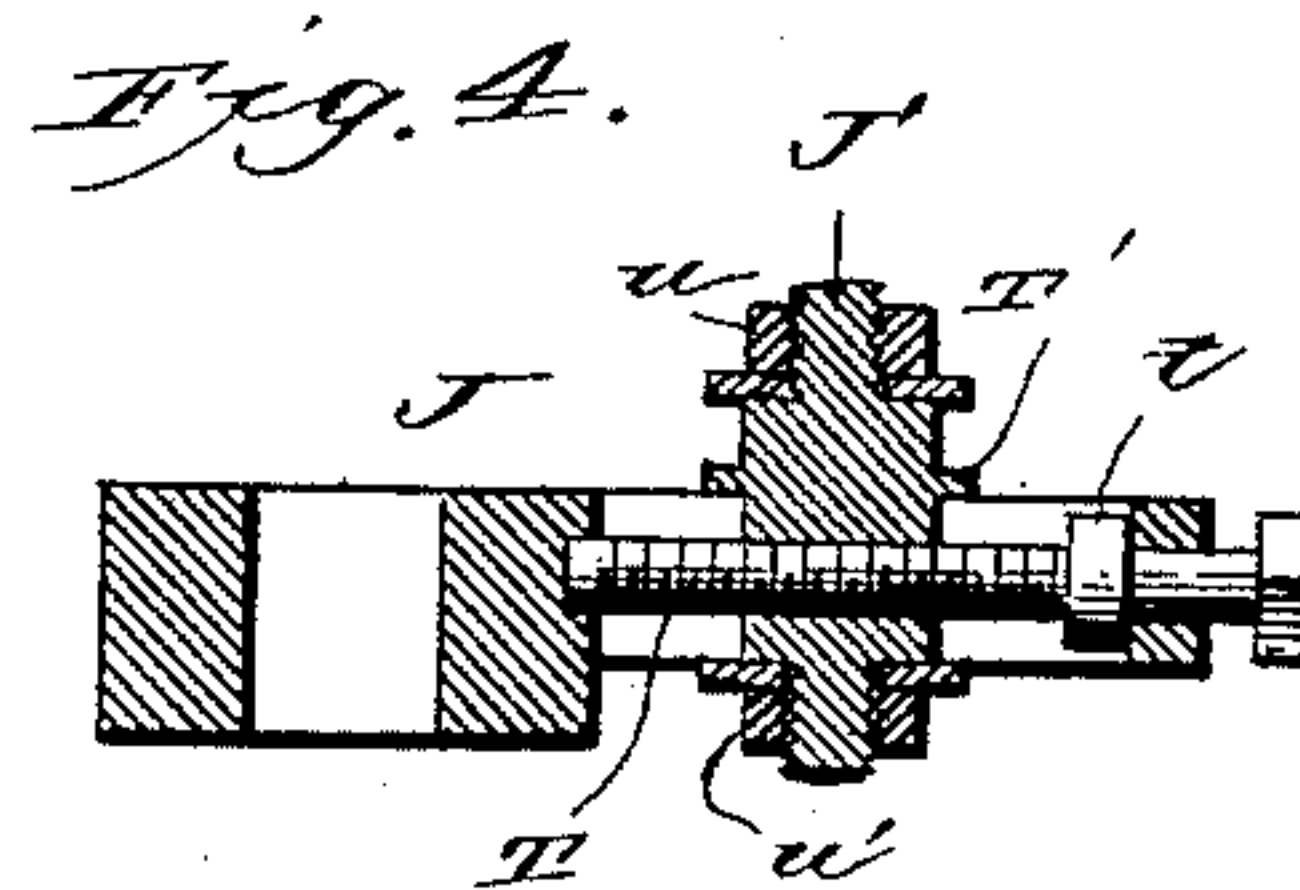
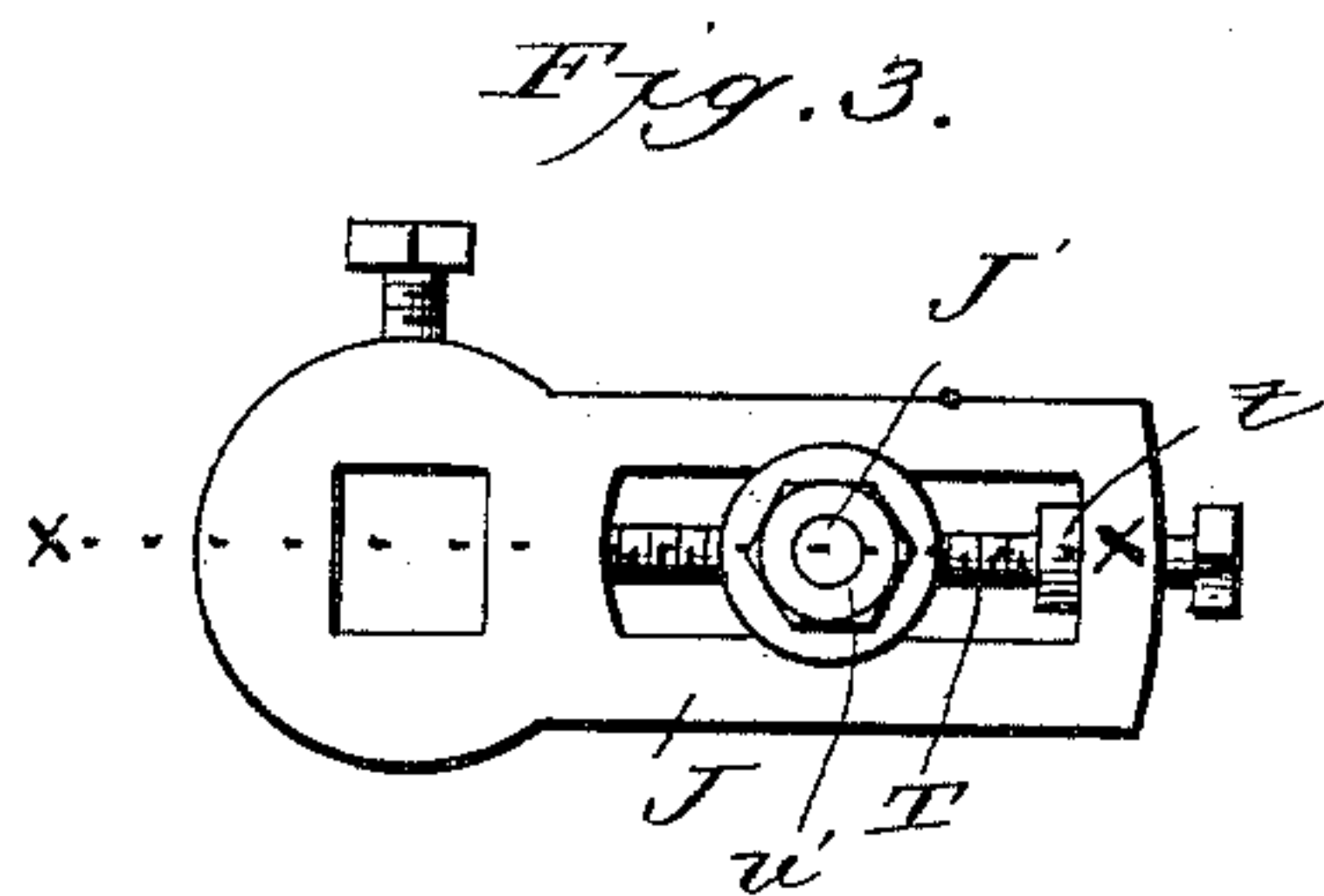
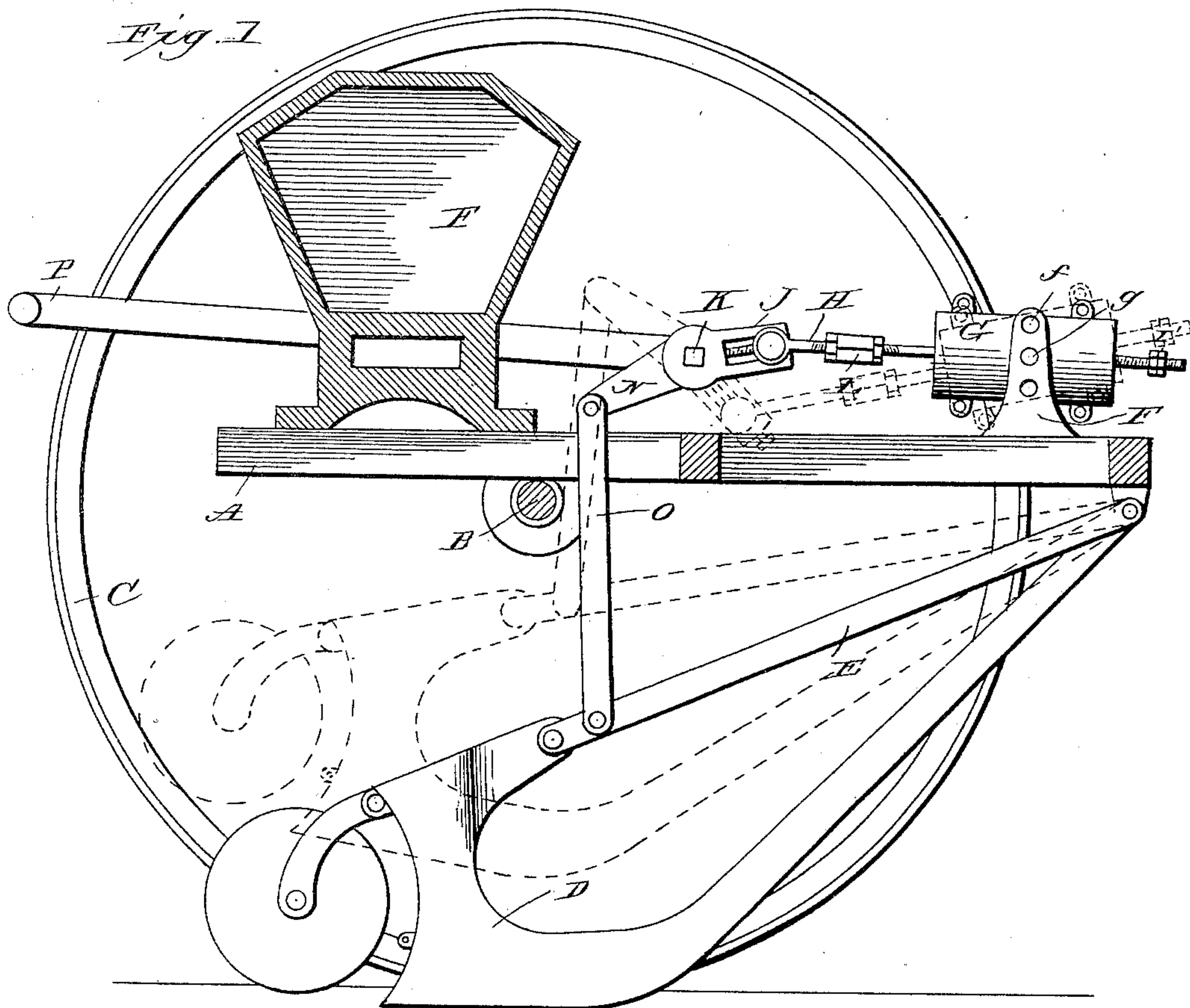
(No Model.)

2 Sheets—Sheet 1.

R. GALLOWAY.  
GRAIN SEEDING MACHINE.

No. 450,787.

Patented Apr. 21, 1891.



Witnesses

E. H. Smith

Alex Stewart.

Inventor

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1894

By his Attorneys

Church & Church

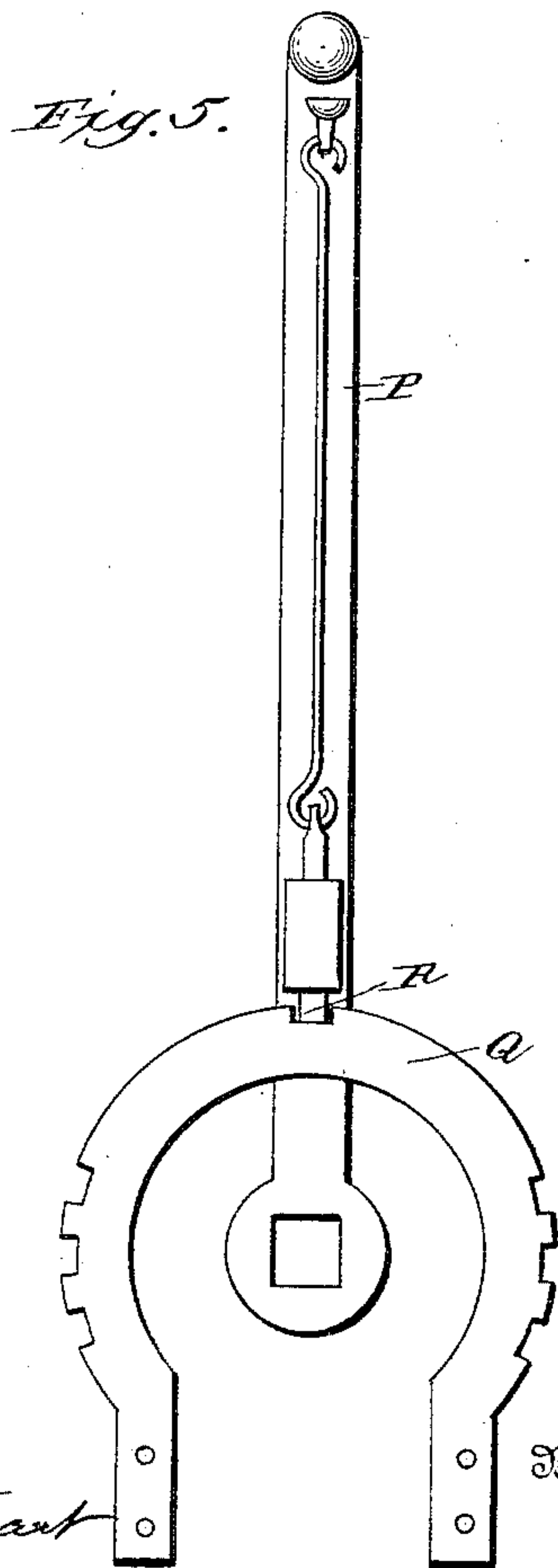
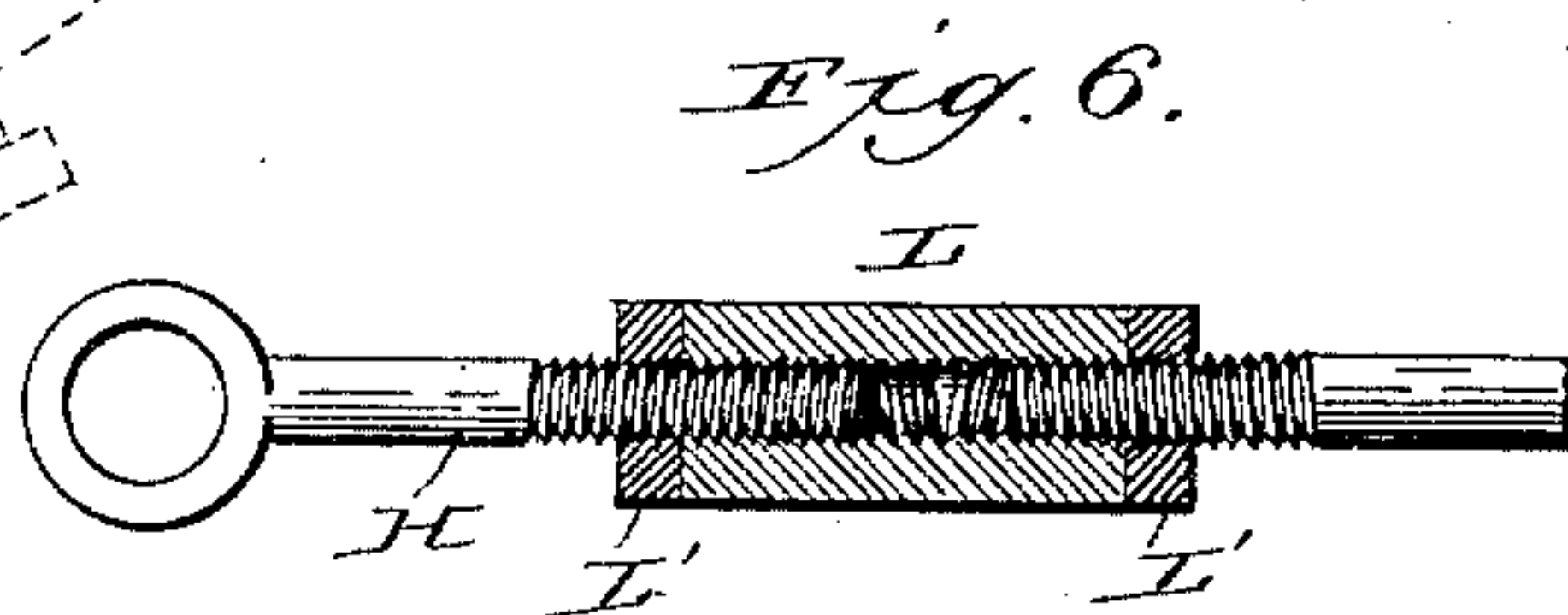
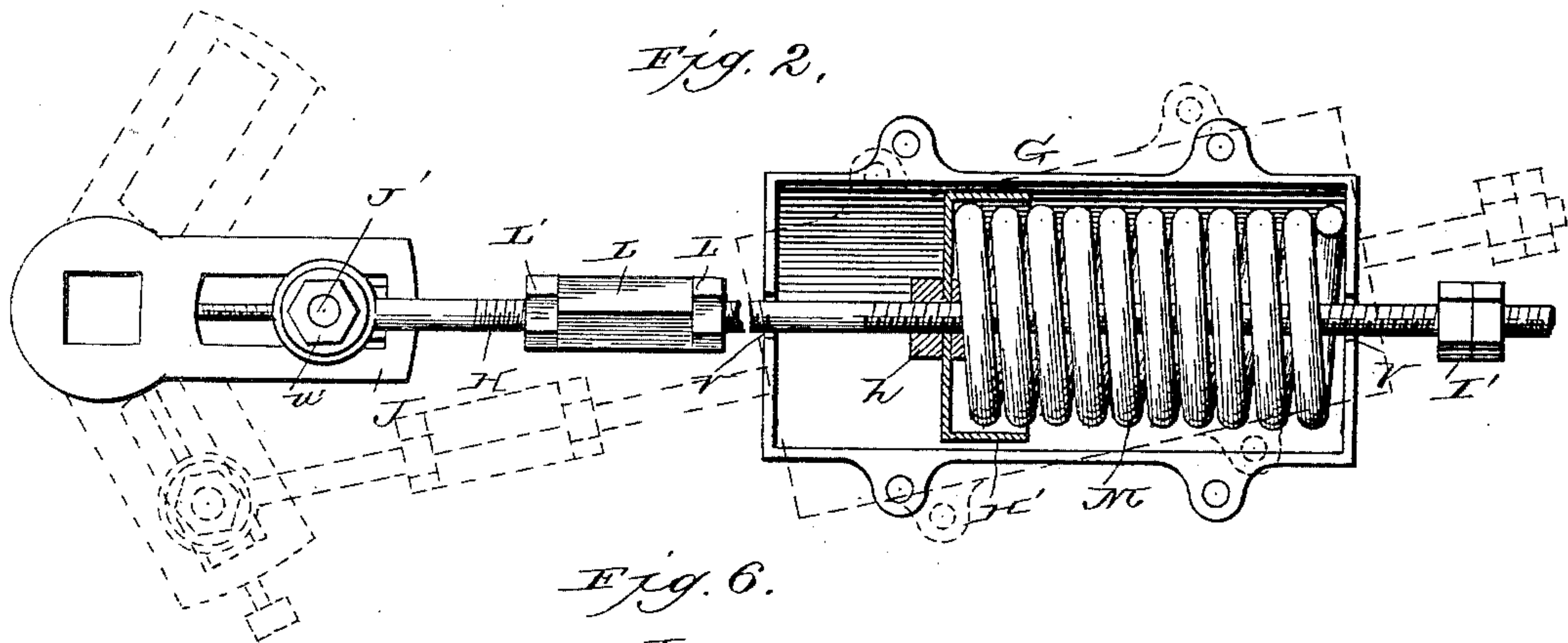
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# UNITED STATES PATENT OFFICE.

ROBERT GALLOWAY, OF MACEDON, NEW YORK.

## GRAIN-SEEDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 450,787, dated April 21, 1891.

Application filed June 17, 1890. Serial No. 355,768. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT GALLOWAY, of Macedon, in the county of Wayne and State of New York, have invented certain new and useful Improvements in Grain-Seeding Machines; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the letters of reference marked thereon.

This invention relates to improvements in grain-drills or seeding-machines, and particularly to the means employed to handle or elevate and depress the drill teeth or shoes, the object being to provide a mechanism which can be adjusted to compensate for the difference in the power required to move a greater or less number of teeth—as, for instance, when it is found necessary to add or remove teeth, press-wheels, or chain-covers, or press-slides for different classes of work, and will assist the operator both in raising the teeth and in applying the necessary pressure on different kinds of soil in which the grain is sowed, and also serve to hold the teeth depressed or elevated with a firm but yielding pressure.

The invention consists in certain novel details of construction and combinations and arrangements of parts, which will be hereinafter described, and pointed out particularly in the claims at the end of this specification.

Referring to the accompanying drawings, Figure 1 is a section through a seeding machine or drill, showing the application of my invention, portions of the machine not essential to the understanding of the invention being omitted. Fig. 2 is an enlarged section through the operating-spring with the upper and lower positions of the parts shown in dotted lines. Fig. 3 is a detail elevation of the adjustable crank. Fig. 4 is a section through the same on the line  $x x$ , Fig. 3. Fig. 5 is a detail elevation of the operating-lever and its segment. Fig. 6 is a sectional detail of the connecting-rod.

Like letters of reference in the several figures indicate the same parts.

In the accompanying drawings I have only deemed it necessary to show such portions of the machine or the framing thereof as is nec-

essary for a full understanding of my present invention, A indicating the main frame, mounted in any suitable manner upon the axle B, which is in turn carried by the ground-wheels C. (Indicated in outline only.)

On top of the main frame is mounted the usual hopper F and complementary parts, and below the same are secured drill teeth or shoes, preferably of the construction shown. Each of the teeth or shoes D is carried by a drag-bar E, pivoted to the frame at the forward end and adapted to be swung down, so as to rest upon or move slightly below the surface of the ground during the seeding operation or else be elevated entirely out of contact with the ground during transportation or to clear the shoes of rubbish or other accumulations, &c. The drag-bars may be adapted to carry either one or two teeth or shoes carrying either press-wheels or chain-coverers or press-slides, or to seed the grain in drills close together or farther apart, as the case may require, the particular construction of the drag bars or teeth shown being well known to those skilled in the art, and hence it is not deemed necessary to describe them further at this time.

Mounted in suitable bearings on the frame is a rock or operating shaft K, on which are mounted a crank arm or arms M, which latter are in turn connected to the drill teeth or shoes by a link or links O, the rock-shaft being controlled by the operator through the medium of the operating-handle P. Thus when the handle is moved in one direction or the other the shaft K is rotated correspondingly and the teeth or shoes elevated or depressed, as will be readily understood.

In order now to provide a means for assisting the operator in the movements just described and to hold the teeth or shoes in the ground with a steady, uniform, but yielding pressure and to assist in moving the same up or down, I provide a spring, which exerts its power against a crank-arm on the shaft K in such manner that when on one side of its center of oscillation will turn the shaft in a direction to depress the shoes and when on the other side of the center of oscillation will tend to turn the shaft in a direction to elevate and keep the shoes up, suitable stops of course be-



ing provided for limiting the movements in either direction. In the preferred form of mechanism for accomplishing these results, and as shown in the drawings, I mount a suitable bracket or bearing block or blocks F preferably on the forward portion of the frame, which blocks preferably have a series of bearings *f* therein, for a purpose to be presently described, and in one set of these bearings is mounted on suitable trunnions *g* a cylindrical casing G. This casing is formed in halves suitably united by bolts or otherwise, and contains a spiral spring M, which bears against the casing-head at one end and at the other end against a piston or cross-head H', mounted on the connecting-rod H, working through apertures V in the casing-heads and jointed to the crank-arm J on the rock-shaft K, by which arrangement it will be seen that the three centers of movement—i. e., the shaft K, connecting pin J', and trunnions *g*'—may be brought into line or the crank-arm and connecting-rod oscillated to either side of said line, and when so oscillated will tend to raise or depress the teeth or shoes. The cross-head H' is preferably adjustably connected to the pitman by set-nuts *h*.

I are lock-nuts which constitute an adjustable stop to limit the throw of the pitman and crank-arm, said nuts being mounted upon the forwardly-extending end of the pitman and adapted to seat against the casing-head.

To vary the relative angle at which the spring shall exert its power with relation to the rock-shaft, the casing may be adjusted to any of the bearings *f*, as will be readily understood, and in order to easily vary or adjust the power exerted by the spring or the throw of the crank-arm the connecting-pin J' is made adjustable, as shown in Figs. 3 and 4. By referring to these figures it will be seen that the crank-arm is slotted and has a central longitudinally-extending screw-bolt T held therein against longitudinal movement by a collar *t*, but is free to rotate. This pin passes through the crank-pin, which latter is provided at one side with a collar T', outside of which is formed the bearing for the pitman or connecting-rod, with a washer and nut *u* to hold the same in position, and on the other side with a washer and nut *u*', which clamps the crank-arm after the connecting-pin has been properly adjusted by means of the screw T and holds the same firmly in position. A means for adjusting the length of the connecting-rod or pitman, and consequently the tension of the spring, is also provided, and consists of a turn-buckle L, having a right and left hand screw-thread therein, which co-operates with correspondingly-screw-threaded ends of the pitman, as shown in Fig. 2, lock-nuts, such as L', being provided at each end to prevent the same from working loose.

The operating-handle P is provided with any preferred or suitable locking-dog, such

as R, which is adapted to engage suitable notches in the segment Q. The segment Q, it will be seen, transcribes about three-fourths of a complete circle, and the notches are so located as that the operating-handle may work either at the front or rear and lock the teeth or shoes in any desired position.

The operation will now be readily understood. Under all conditions the parts are preferably so adjusted as that the three centers—i. e., the shaft, crank-pin, and trunnions—are in line when the drill teeth or shoes are just at the surface of the ground, and any movement in either direction from this position will move the crank-pin to one side of the center, and the spring will immediately assert itself and assist in moving the teeth or shoes in the desired direction. Should it be desired to change the position of the shoes from elevated to depressed, it is only necessary for the operator to grasp the handle P and turn the shaft until the crank-pin is past the center, as will be readily understood, the toggle-lever formed by the crank and pitman enabling the pressure exerted by the spring to be easily overcome. When it is necessary to employ a different design of teeth for seeding different kinds of grain the different kinds of soil, &c., it is desirable also to regulate the power exerted by the spring, which may be accomplished by adjusting the crank-pin or the turn-buckle L; or, if preferred, both of them may be adjusted to accomplish the desired end, and should it for any reason be desired to regulate the distance which the teeth or shoes penetrate the ground it may be easily and quickly accomplished by adjusting the handle P.

Having thus described my invention, what I claim as new is—

1. In a grain-seeding machine, the combination, with the vertically-movable teeth or shoes, the rock-shaft connected thereto, and the operating-handle connected to said shaft, of the crank mounted on the shaft, the pitman adjustably connected thereto so as to vary the length of the crank, and the spring engaging said pitman and adapted to turn the shaft in either direction from its center of oscillation, substantially as described.

2. In a grain-seeding machine, the combination, with the vertically-movable teeth or shoes, the rock-shaft having the crank-arms connected to the shoes by links, and the operating-handle, of the crank-arm on the rock-shaft, the pitman connected thereto, the spring bearing against said pitman and operating to turn the shaft to either side of the center of oscillation, and the adjustable stop for limiting the extent of such movement, substantially as described.

3. In a grain-seeding machine, the combination, with the vertically-movable teeth or shoes, the rock-shaft connected thereto for moving the same, and the operating-handle, of the crank on said shaft, the pitman adjustably connected thereto, means, substan-



tially as described, for adjusting the length of the pitman, and the spring engaging the pitman and operating to move the crank in either direction from its center of oscillation, whereby the teeth or shoes will be elevated or depressed, substantially as described.

4. In a grain-seeding machine, the combination, with the vertically-movable teeth or shoes, the rock-shaft connected thereto for moving the same, and the operating-handle, of the crank on said shaft having the central slot and screw-bolt, the crank-pin with which said bolt co-operates, the pitman having the turn-buckle, as described, and the spring engaging said pitman to move the crank in either direction from its center of oscillation, and the adjustable stop for limiting the movement of the pitman, substantially as described.

5. In a grain-seeding machine, the combination, with the teeth or shoes, rock-shaft connected thereto, and operating-handle, of the crank on said shaft, the pitman connected thereto, the pivoted casing surrounding said pitman, and the spring within the casing and engaging the pitman, substantially as described.

6. In a grain-seeding machine, the combination, with the teeth or shoes, rock-shaft connected thereto, and the operating-handle, of the crank on said shaft, the pitman connected thereto, and the casing surrounding the pitman and pivoted on adjustable centers of the spring within the casing engaging the pitman, substantially as described.

7. In a grain-seeding machine, the combination, with the vertically-movable teeth or shoes, the rock-shaft having the crank-arms connected to the shoes, and the operating-handle, of the crank on the rock-shaft, the pitman connected thereto, the casing formed in halves surrounding said pitman and having

the trunnions at each side pivoted in the bearing-blocks, the spring within the casing, engaging a cross-head or piston on the pitman, and the stop for limiting the outward movement of the pitman, substantially as described.

8. In a grain-seeding machine, the combination, with the vertically-movable teeth or shoes, the rock-shaft connected thereto for moving the same, and the operating-handle, of the crank mounted on the rock-shaft, having the central slot and the crank-pin and adapted to move in either direction from its center of oscillation, the pitman having the turn-buckle, as described, connected thereto, the spring within the pivoted casing, bearing against the said pitman and operating to turn the crank in either direction from its center of oscillation, and the adjusting-stop for limiting the movement of the pitman, substantially as described.

9. In a grain-seeding machine, the combination, with the vertically-movable teeth or shoes, the rock-shaft connected thereto for moving the same, and the operating-handle, of the crank mounted on the rock-shaft, having the central slot and the crank-pin and adapted to move in either direction from its center of oscillation, the pitman having the turn-buckle, as described, connected thereto and adapted to move in either direction from its center of oscillation, and the spring within the pivoted casing, bearing against the said pitman and operating to turn the crank in either direction from its center of oscillation, whereby the teeth or shoes will be elevated or depressed, substantially as described.

ROBERT GALLOWAY.

Witnesses:

ISAAC DEAN,  
CHAS. R. EVERSON.