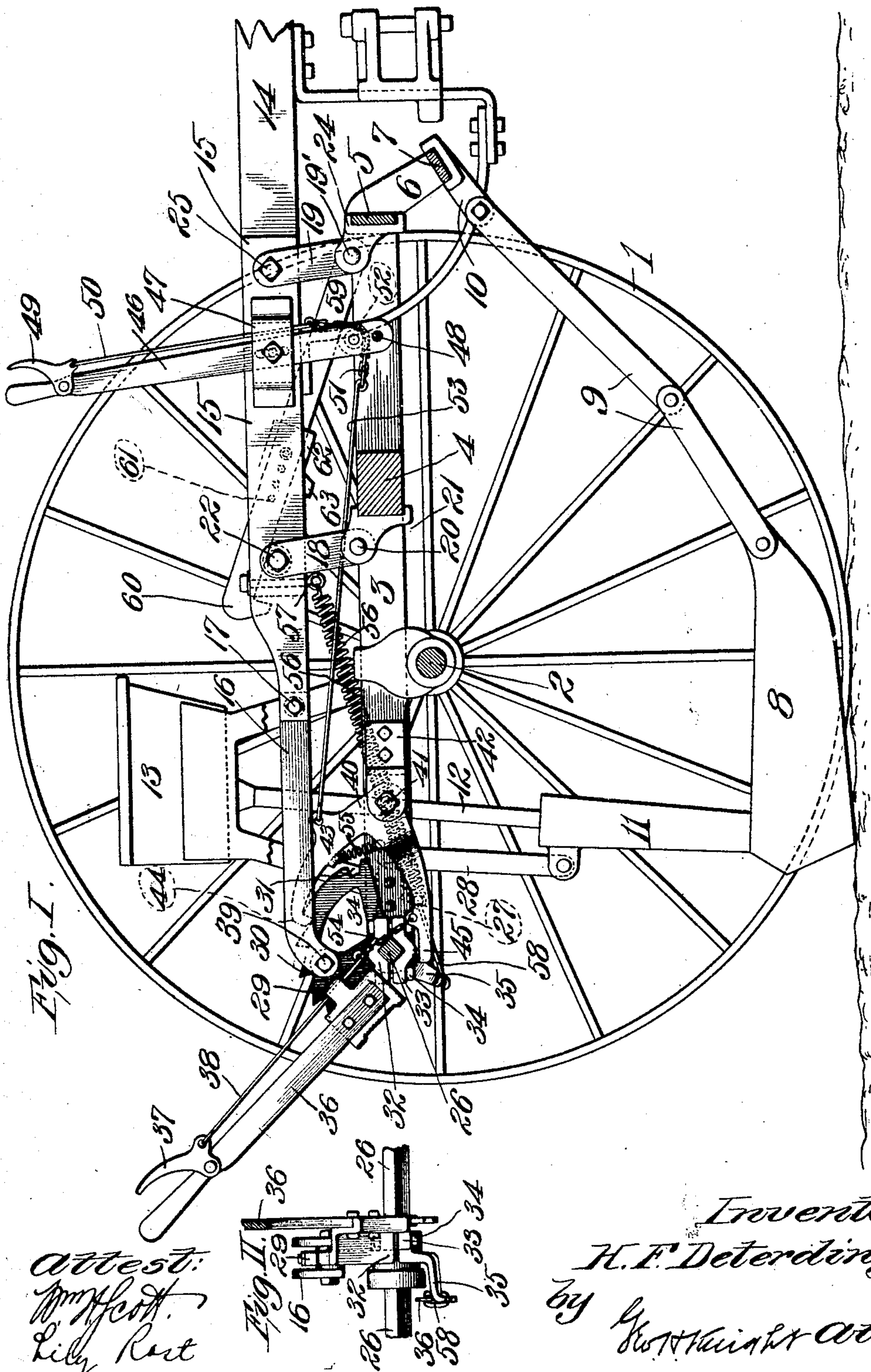


H. F. DETERDING.  
 MEANS FOR OPERATING FURROW OPENERS OF SEEDING MACHINES.  
 APPLICATION FILED AUG. 12, 1907.

912,827.

Patented Feb. 16, 1909.

3 SHEETS—SHEET 1.



Attest:  
*[Signature]*  
 Lily Rant

Inventor:  
 H. F. Deterding,  
 by *[Signature]* & atty.

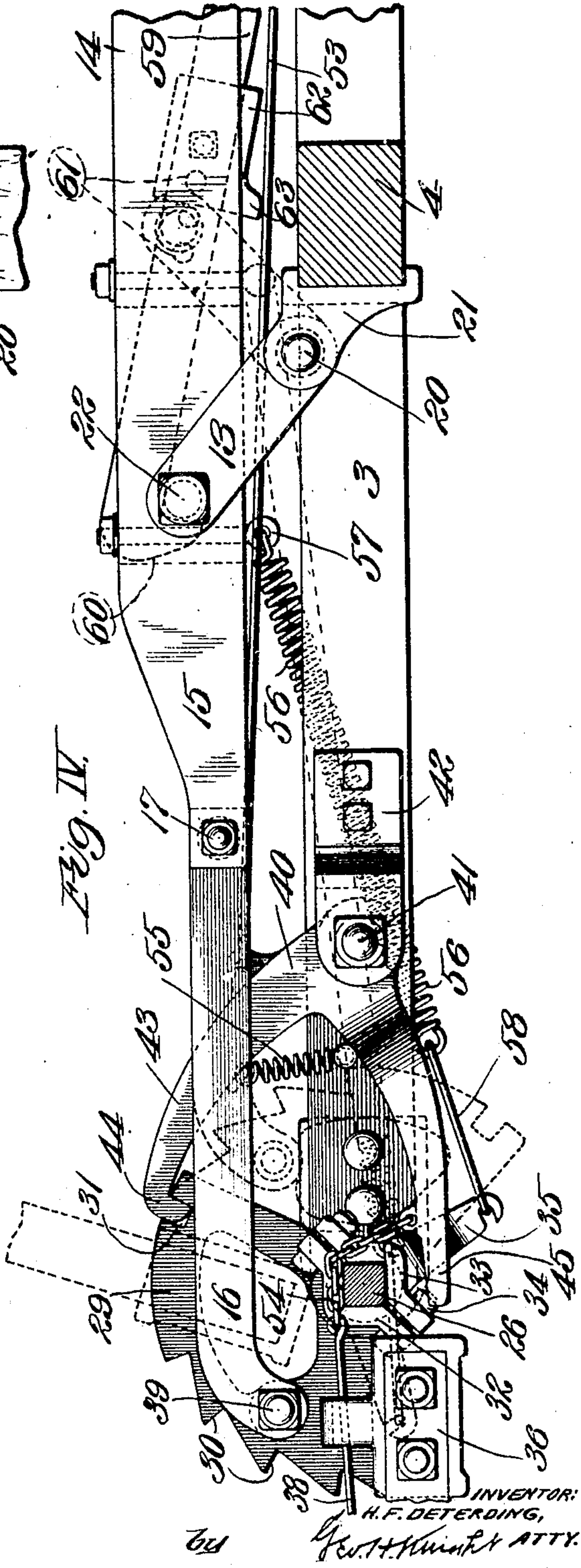
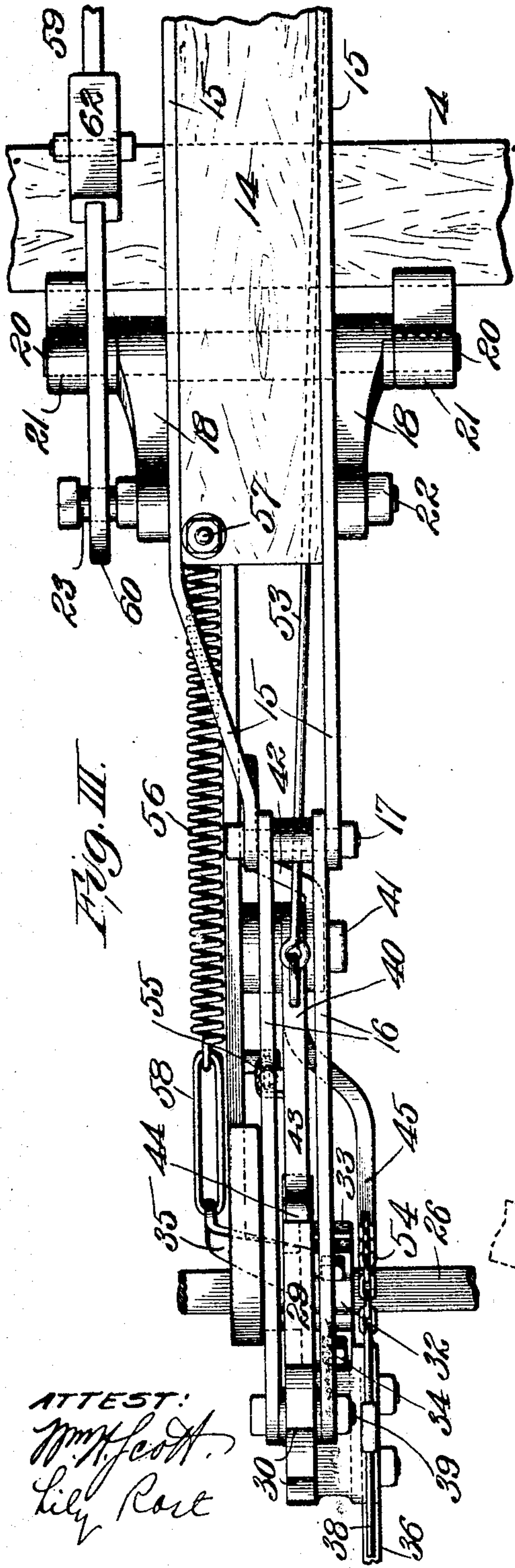
H. F. DETERDING.  
 MEANS FOR OPERATING FURROW OPENERS OF SEEDING MACHINES.

APPLICATION FILED AUG. 12, 1907.

Patented Feb. 16, 1909.

3 SHEETS—SHEET 2.

912,827.



ATTEST:  
*Wm. H. Scott*  
 Lily Rose

INVENTOR:  
 H. F. DETERDING,  
 Geo. T. Hunt & ATT'Y.



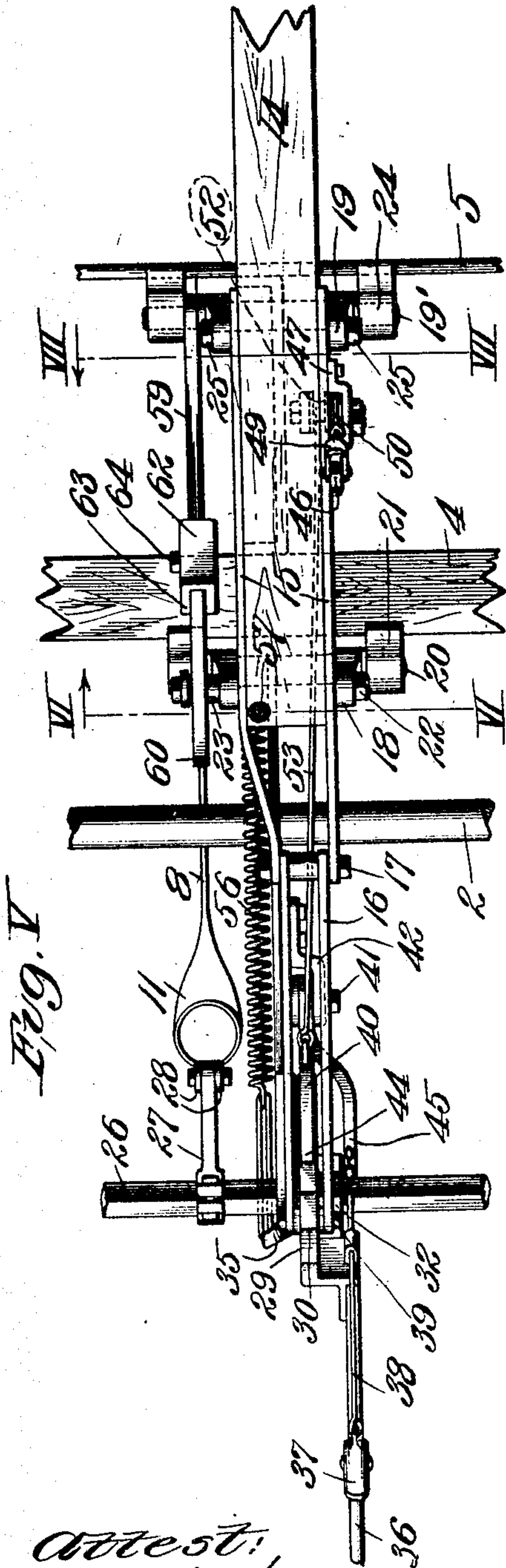
H. F. DETERDING.  
MEANS FOR OPERATING FURROW OPENERS OF SEEDING MACHINES.

APPLICATION FILED AUG. 12, 1907.

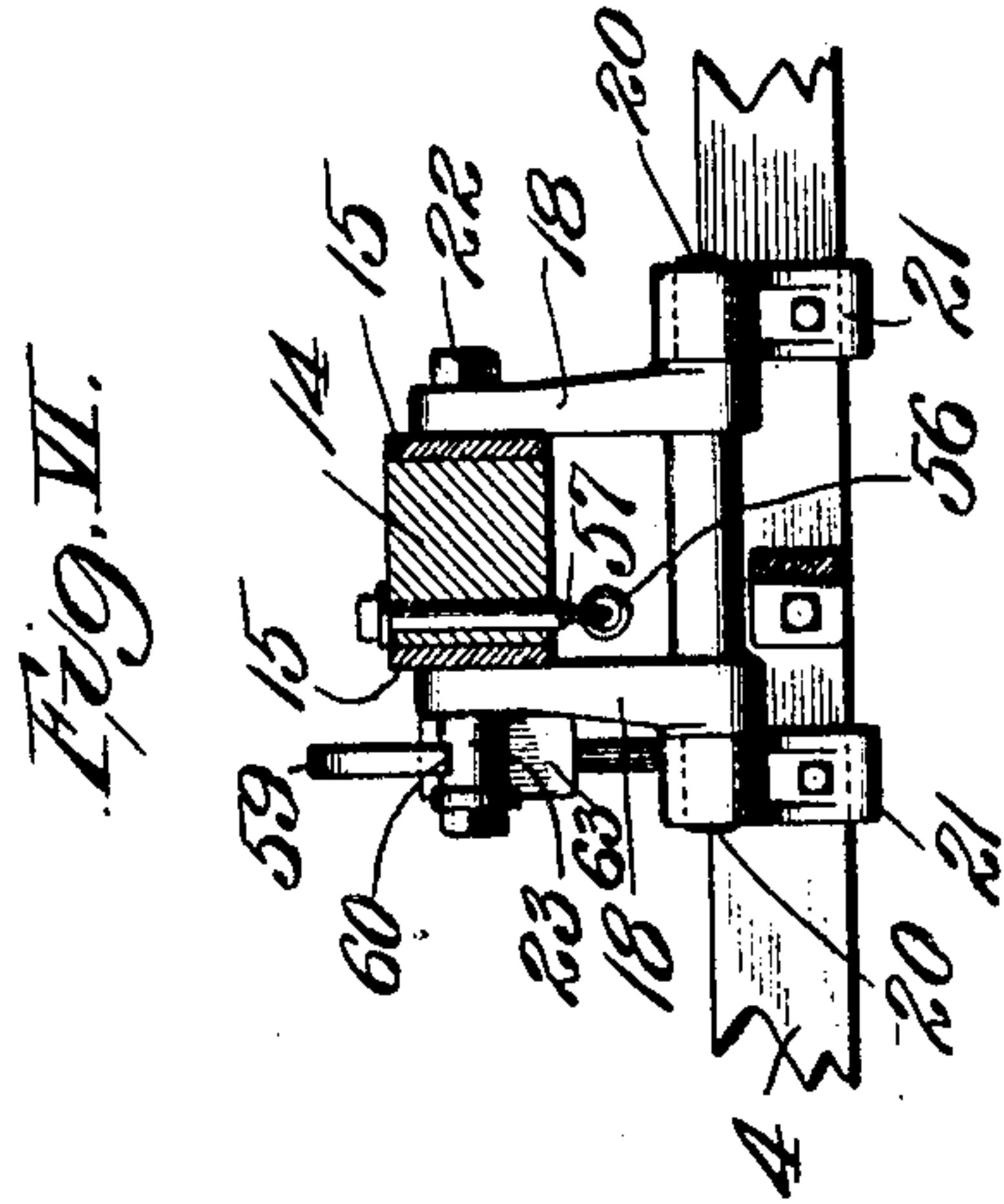
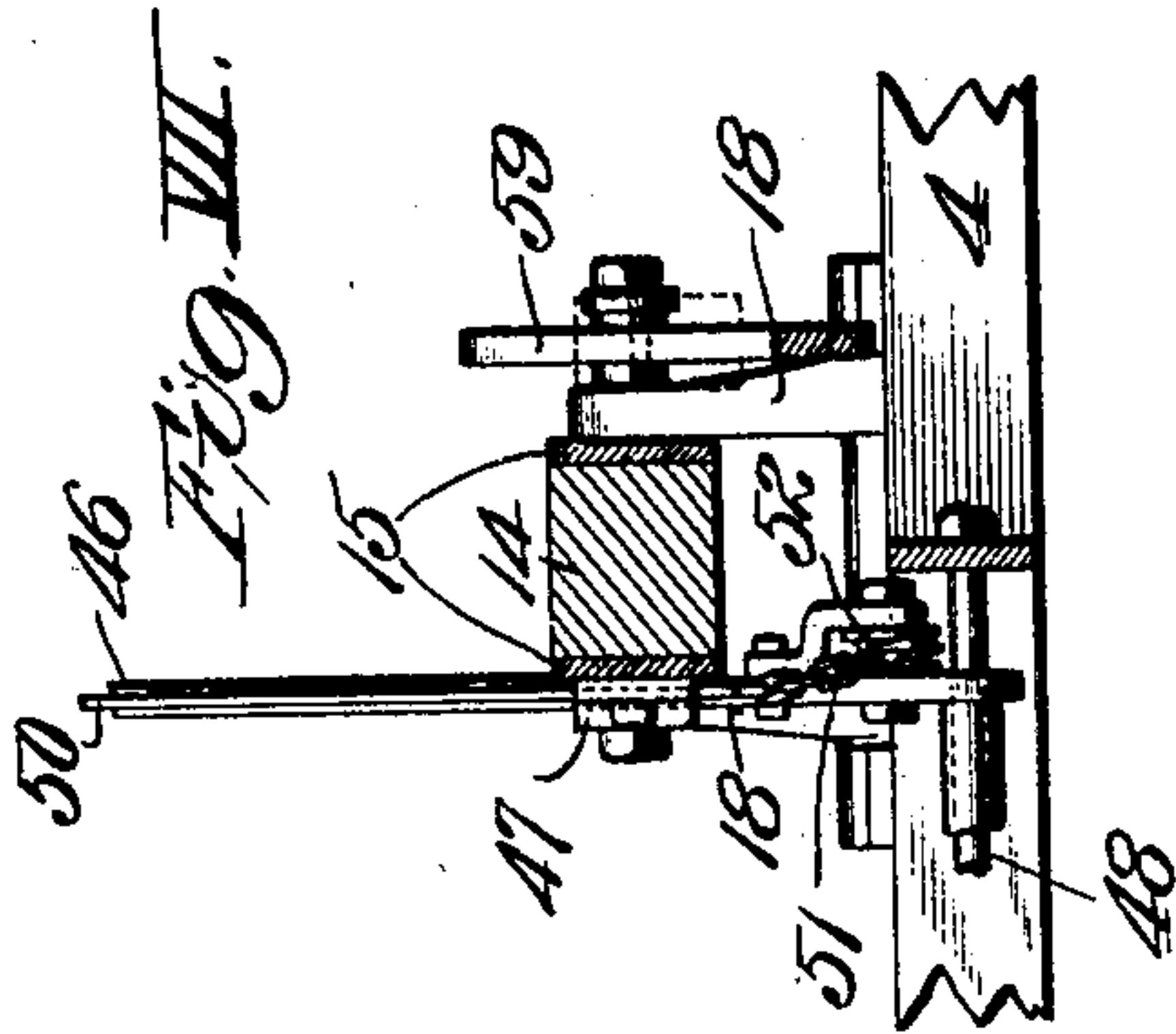
Patented Feb. 16, 1909.

3 SHEETS—SHEET 3.

912,827.



Attest:  
Jm. H. Scott  
Lily Root



Inventor:  
H. F. Deterding,  
by Geo. H. Knight  
Atty.



# UNITED STATES PATENT OFFICE.

HENRY F. DETERDING, OF ST. LOUIS, MISSOURI.

MEANS FOR OPERATING FURROW-OPENERS OF SEEDING-MACHINES.

No. 912,827.

Specification of Letters Patent.

Patented Feb. 16, 1909.

Application filed August 12, 1907. Serial No. 388,110.

*To all whom it may concern:*

Be it known that I, HENRY F. DETERDING, a citizen of the United States of America, residing in the city of St. Louis and State of Missouri, have invented certain new and useful Improvements in Means for Operating Furrow-Openers of Seeding-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to mechanism whereby the furrow openers of seeding machines may be automatically lowered to and into the ground and elevated from the ground through the medium of the draft tongue of the seeding machine, and also to means associated with the first mentioned means, whereby the furrow opener may be manually lowered and raised.

Features of construction shown and described in this application are claimed in a co-pending application Serial Number 397,356, filed October 14, 1907, a renewal of application Serial Number 337,267, filed October 3, 1906.

Figure I is a side elevation of my furrow opener actuating means with the frame of the seeding machine shown in vertical longitudinal section. Fig. II is a rear elevation of the central portion of the rock shaft mounted in the frame of the seeding machine and the members supported by this rock shaft. Fig. III is an enlarged top or plan view of the rear end of the draft tongue of the machine and the parts that cooperate with said tongue. Fig. IV is a side elevation of the tongue and parts shown in Fig. III. Fig. V is a similar view to Fig. III with the tongue and parts cooperating with it illustrated in positions assumed, when said tongue has been moved forwardly from the position shown in Fig. III. Fig. VI is a vertical cross section taken on line VI—VI, Fig. V. Fig. VII is a vertical cross section taken on line VII—VII, Fig. V.

In the accompanying drawings: 1 designates one of a pair of ground wheels of a seeding machine, and 2 the axle that is mounted in said wheels. The axle supports a frame which includes longitudinal members 3, a transverse beam 4 located intermediate of the forward and rear ends of the longitudinal members and the forward tie bar 5 which unites said longitudinal members.

6 are hanger arms projecting downwardly

from the tie bar 5 and which support a hanger bar 7 that extends transversely of the frame of the machine.

8 is a furrow opener, the forward end of which is connected by draw links 9 to the hanger bar 7 through the medium of a connection block 10 fixed to said bar. The furrow opener supports a seed chute 11 into which grain is dropped from a seed box 13 through a tube 12. The seed box 13 has the utility, in addition to its service as a container for seed, of serving as a seat for the operator of the machine while driving the team by which the seeding machine is drawn over the ground in which seed is to be planted.

14 designates a draft tongue, to the rear portion of which is secured a pair of side bars 15, which terminates beyond the rear end of the tongue, as seen most clearly in Figs. III and V.

16 are a pair of connecting bars that are pivotally united at their forward ends to the rear ends of the side bars 15 by a coupling bolt 17. The connection bars are also united to a member to be hereinafter more particularly referred to. To provide for the draft tongue being susceptible of a forward and rearward movement relative to the frame of the seeding machine, said tongue is supported by a pair of U-shape rocker members 18 and 19, both of which have arms that embrace the draft tongue as clearly shown in Figs. V to VI inclusive. The rocker member 18 is provided with pintles 20 which are loosely mounted in brackets 21 secured to the cross beam 4 of the frame of the seeding machine, and the arms of this rocker member are loosely connected to the draft tongue by a pivot bolt 22 which extends through the arms of the draft tongue and which is provided at one end with a stem 23 that is of service in a manner to be hereinafter explained. The rocker member 19 is provided with pintles 19' that are loosely mounted in brackets 24 secured to the tie bar 5 of the seeding machine frame, and the arms of this rocker member are pivotally connected to the draft tongue by a pivot bolt 25. It will be seen from the foregoing description, that the draft tongue is so supported by the rocker members 18 and 19 that it is susceptible of forward and rearward movement when it is drawn forwardly by a team of draft animals hitched to it, or moved rearwardly when the draft



animals are backed relative to the seeding machine.

26 designates a rock shaft that is loosely mounted in the rear portion of the side members 3 of the seeding machine.

27 is a lift arm that is securely fastened to the rock shaft 26 and which is united to the furrow opener 8 by a link 28 which is pivoted to said arm and the seed chute of the furrow opener, as seen in Figs. I and V.

29 designates a segmental ratchet rack which is provided with a series of ratchet teeth 30 located at the edge of the rack and extending rearwardly from its rear end and also with a notch 31, located near the forward end of the rack in the edge thereof. The ratchet rack is secured to the rock shaft 26 by a clip member 32 formed integral with the rack and a clip member 33 which opposes the clip member 32 and is united to it by bolts 34 which serve to hold the ratchet rack in a rigid position upon the rock shaft 26.

35 is an arm extending downwardly from the clip member 33, as seen in Figs. I and IV.

36 is a hand lever fixed to the ratchet rack 29 and to which is pivoted a grip arm 37 that has united to it a pull rod 38, having a function to be hereinafter mentioned.

The draft tongue 14 is pivotally connected at 39 to the ratchet rack 29 by means of a bolt which passes through the rear end of the connecting bars 16 and said ratchet rack. It will be readily understood that when the ratchet rack is in a free condition and the draft tongue is in a rear position, as illustrated in Fig. IV, a pull may be exerted upon the draft tongue that will cause it to be drawn forwardly to exert a pull upon the ratchet rack and rotate the rock shaft 26 in a forward direction with the result of causing the arm 27 to be moved downwardly and act to lower the furrow opener 8 that is connected to said arm to and into the ground. It will also be understood that when the draft tongue is moved rearwardly, it will act upon the ratchet rack and by rotating the rock shaft in a backward direction cause the furrow opener to be lifted from the ground.

The ratchet rack 29 is controlled by means which will now be described. 40 is a double arm pawl member that is pivoted at 41 to a bracket 42 secured to the frame of the seeding machine at a point in front of the ratchet rack. This pawl member is provided with an upwardly extending pawl 43, having a tooth 44 that is adapted to engage the teeth 30 of the ratchet rack, and to enter the notch 31 in said rack, as illustrated in Figs. I and IV. The pawl member 40 has a lower arm 45 which extends rearwardly to a position beneath the rock shaft 26. 46 is a hand lever pivotally mounted in a bracket strap 47 fixed to the draft tongue 14 and pivoted at 48 to the frame of the seeding machine, as seen in Fig. I. The

hand lever has pivoted to it a grip arm 49 to which is attached a pull rod 50 that leads to a chain 51 which passes around a sheave 52 (see Figs. I and VII) supported by the hand lever 46 and which is united to a connecting rod 53 that leads to the pawl arm 43. When the handle of the hand lever 46 is grasped by the operator of the seeding machine while riding upon the machine and the grip arm 49 is moved to said handle, the pawl 43 is released from the ratchet rack 29 so that said ratchet rack is freed, and the draft tongue is rendered serviceable for the lowering or lifting of the furrow opener in the manner previously stated. In the actuation of the pawl member 40 to move the pawl 43 out of engagement with the ratchet rack, the lower arm 45 of said pawl member serves to limit the degree of movement of said pawl member, due to its rising into contact with the rock shaft 26. It should be here noted that the pawl 43 acts by engagement with the teeth 30 of the ratchet rack to restrain said rack from movement when the furrow opener has been lowered into the ground to the desired depth. The pawl also acts to hold the rack bar from movement when the furrow opener is in an elevated position and out of service, the engagement between the pawl and rack at this time being accomplished by the entrance of the tooth of the pawl into the notch 31 in the rack. The hand lever 36 serves as a means for actuating the pawl member 40, when the operator of the machine is walking upon the ground at the rear of the machine, in order that the draft tongue may be brought into operation for furrow opener lowering and lifting action, and the actuation of the pawl member in this instance is accomplished through the medium of the grip arm 37 and connecting rod 38 carried by said hand lever and a connecting chain 54 that unites said connecting rod to the lower arm 45 of the pawl member. 55 is a retracting spring that connects the pawl member 40 to the frame of the seeding machine and through the medium of which the pawl arm of said member is maintained in engagement with the ratchet rack 29 when the pawl member is at rest. 56 designates an assistance spring that is connected to the draft tongue 14 by an eye bolt 57 seated in said tongue and by a link 58 to the arm 35 that is associated with the ratchet rack 29. This spring serves as a means for actuating the ratchet rack in connection with the draft tongue and the other parts associated therewith, in order that the furrow opener may be more readily elevated from the ground.

The hand levers 36 and 46 serve as means for the manual operation of the ratchet rack 29. When the operator of the machine is riding on the machine and desires to elevate the furrow opener from the ground, it is



only necessary for him to grasp the handle of the hand lever 46 and together with said handle the grip arm 49 carried by said hand lever. He thereby releases the pawl 43 from the ratchet rack and by a rearward pull upon said hand lever, draws the draft tongue rearwardly with the result of moving the ratchet rack in a corresponding direction and raising the furrow opener during the rearward rotation of the rock shaft 26. The pawl arm 43 is then released and its tooth 44 engages in the notch 31 of the ratchet rack and acts to hold said rack from movement, and the furrow opener in its up-  
 15 lifted position. When the operator is walking upon the ground and desires to elevate the furrow opener, he grasps the handle of the hand lever 36 and the grip arm 37, thereby releasing the pawl 43 from the ratchet  
 20 rack 29, after which he imparts a downward pull to said hand lever and thereby moves the ratchet rack rearwardly until the furrow opener is elevated, after which the pawl arm is released to engage the ratchet rack in  
 25 a manner previously stated. When the operator has moved the hand lever 36 to the position in which it appears in full lines, Fig. IV, the furrow opener is in elevated position. When said hand lever is moved to  
 30 the position seen in full lines, Fig. I, the furrow opener is in lowered position and rests upon the ground. When the hand lever is in the position indicated in dotted lines, Fig. IV, the furrow opener is in the  
 35 position assumed after it has been forced into the ground during seed planting operation.

For the purpose of restricting the degree of movement of the draft tongue, and consequently the degrees of movement of the ratchet rack and the other parts associated with, and having connection to said ratchet rack, including the furrow opener, I utilize a gage bar 59 that is loosely fitted to one of  
 45 the pintles of the forward rocker member 19 by which the draft tongue 14 is supported. This gage bar extends rearwardly from its point of attachment just mentioned and it is provided at its rear end with a hook 60 and  
 50 contains a plurality of pin holes 61, seen in dotted lines Fig. I, which are located intermediate of the ends of the bar. 62 is a catch movably mounted on the gage bar and provided at its rear end with a finger 63. This  
 55 catch is adjustably held to the gage bar by a pin or bolt 64 that is inserted into the catch and into either of the pin holes in said gage bar. The rear portion of the gage bar 59 rests upon the stem 23 of the pivot bolt  
 60 22 which connects the rocker member 18 to the draft tongue. When the draft tongue is drawn forwardly in the act of lowering the furrow opener to and into the ground, the catch 62 serves as a means for restricting

the degree of forward movement of said tongue and consequently the degree to which the furrow opener is lowered, this being due to the stem 23 coming in contact with the finger of the catch 62. It will be seen that due to the catch being adjustably mounted  
 70 upon the gage bar, the depth to which the furrow opener is caused to enter the ground may be varied, as may be desired. The hook 60 at the rear end of the gage bar serves as a means for limiting the degree of  
 75 rearward movement of the draft tongue, due to the stem 23 coming in contact with said hook, when the draft tongue is moved rearwardly to the proper extent.

I claim:

1. The combination with a seeding machine including a frame and a furrow opener, of a draft tongue movably supported by said frame and having connection with said furrow opener, and a gage device for  
 85 restricting the degree of movement of said tongue, substantially as set forth.

2. The combination with a seeding machine, including a frame and a furrow opener, of a draft tongue movably supported  
 90 by said frame and having connection with said furrow opener, and a gage device for restricting the degree of movement of said tongue; said gage device being provided with an adjustable member, substantially as  
 95 set forth.

3. The combination with a seeding machine including a frame and a furrow opener, of a rock shaft loosely fitted to said frame and having connection with said fur-  
 100 row opener, a ratchet rack fixed to said shaft, a draft tongue movably supported by said frame and having connection with said ratchet rack, and a pawl supported by said frame arranged for engagement with said  
 105 ratchet rack and adapted to hold the rack from movement after it has been actuated to move said furrow opener, substantially as set forth.

4. The combination with a seeding machine including a frame and a furrow  
 110 opener, of a rock shaft loosely mounted in said frame, a ratchet rack fixed to said shaft and having connection with said furrow opener, a draft tongue movably supported  
 115 by said frame and having connection with said ratchet rack, and a double arm pawl supported by said frame for controlling said ratchet rack, one arm of said pawl being adapted to engage said rack and the other  
 120 arm being adapted to serve as a stop for the pawl, and means for actuating said pawl, substantially as set forth.

HENRY F. DETERDING.

In presence of—

BLANCHE HOGAN,  
 WM. H. SCOTT.