

No. 618,400.

Patented Jan. 31, 1899.

J. DIETER.  
CLOD CRUSHER.

(Application filed Apr. 12, 1898.)

(No Model.)

2 Sheets—Sheet 1.

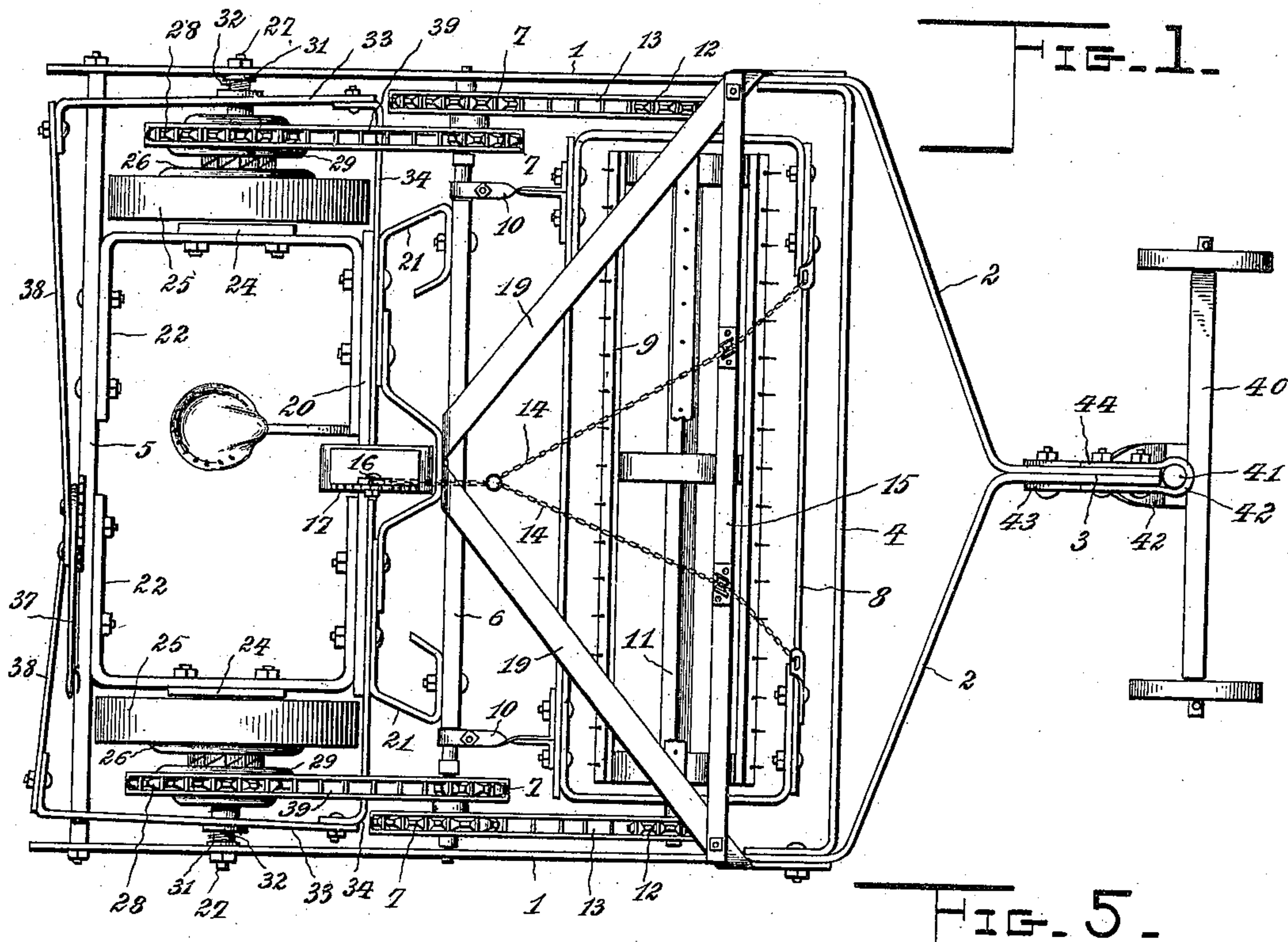


FIG. 5.

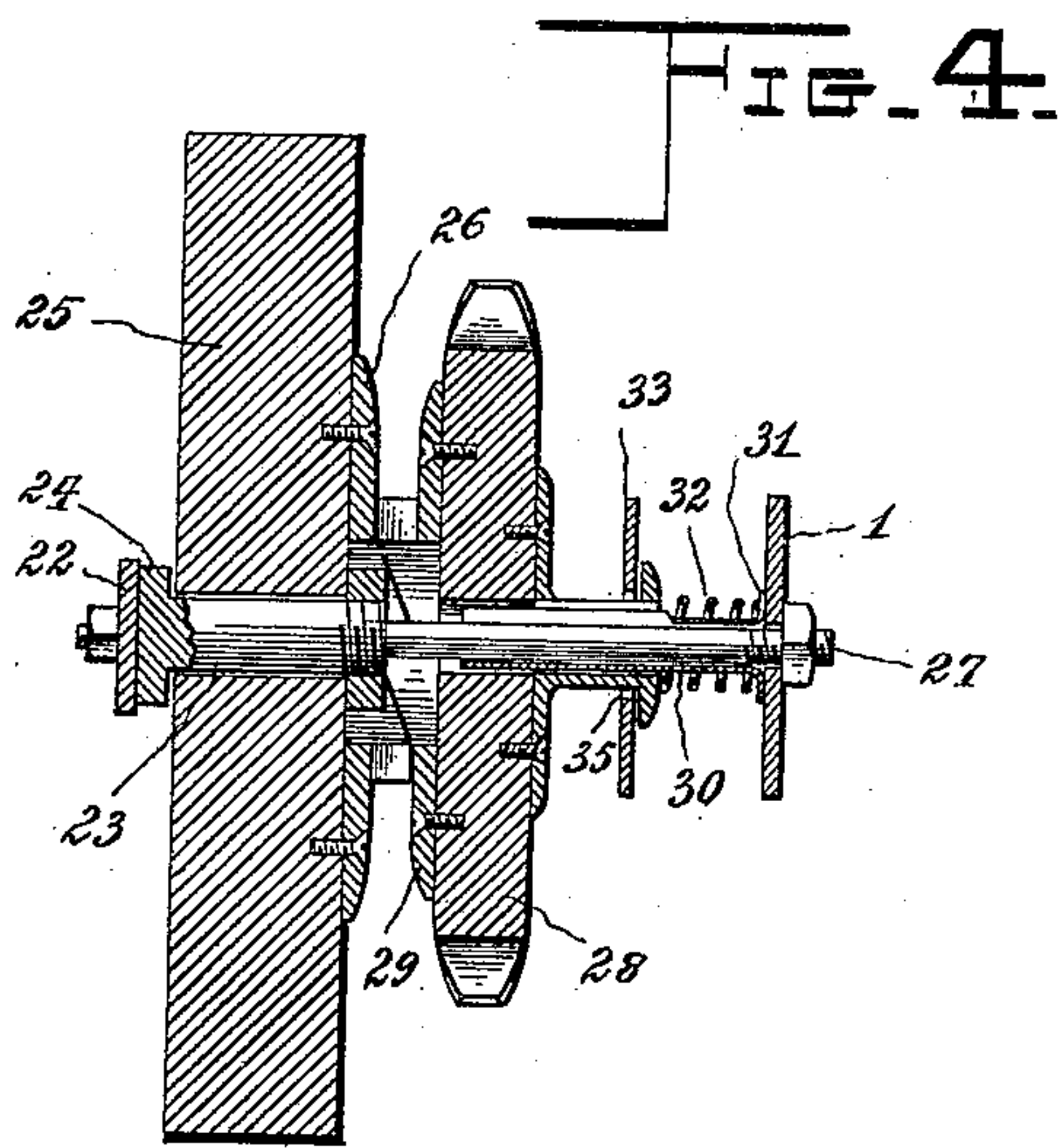
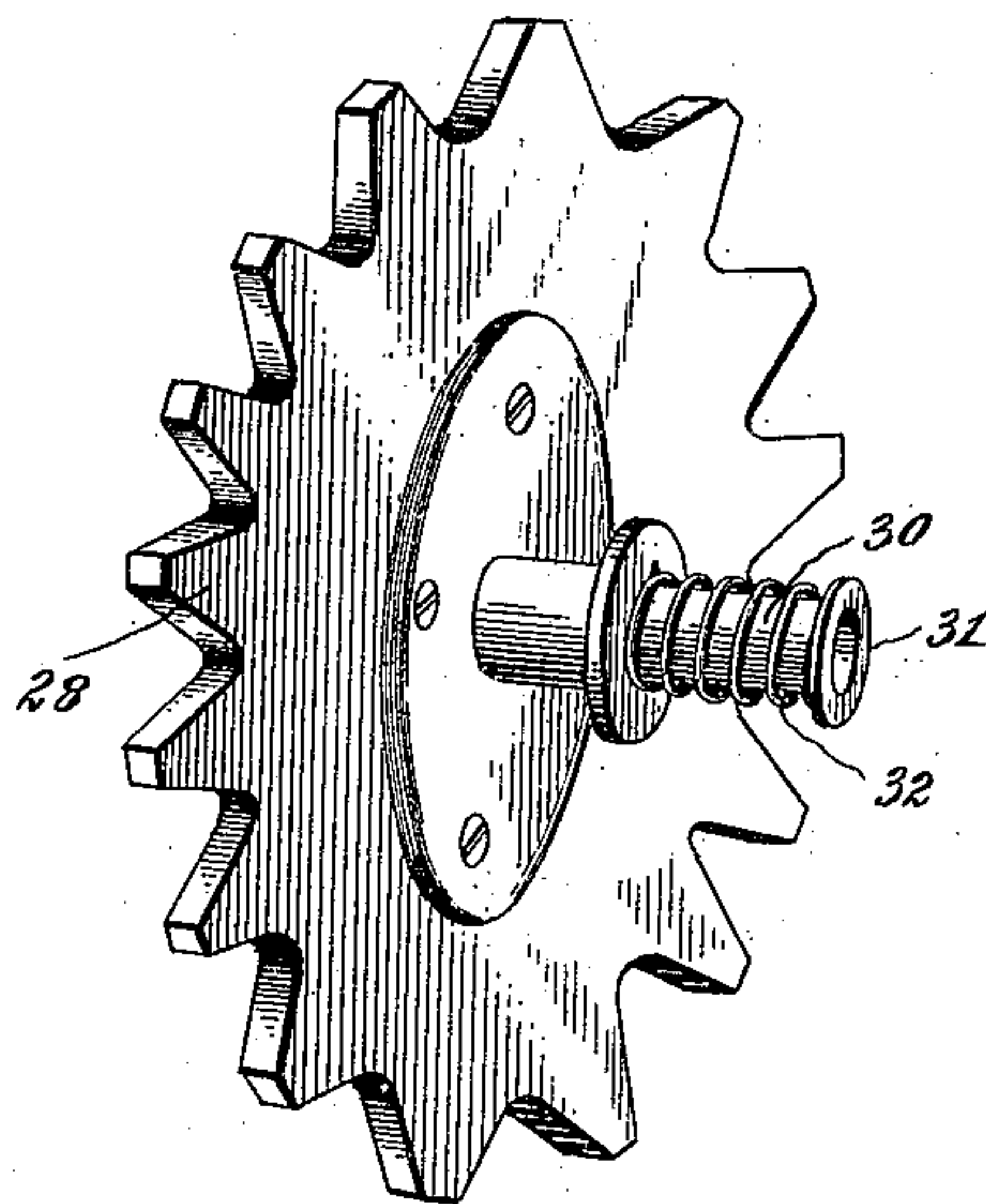


FIG. 4.



Witnesses

John F. Deffenwiel  
V. B. Hillyard.

By his Attorneys,

John Dieter Inventor

C. A. Snow & Co.

No. 618,400.

Patented Jan. 31, 1899.

J. DIETER.  
CLOD CRUSHER.

(Application filed Apr. 12, 1898.)

(No Model.)

2 Sheets—Sheet 2.

FIG. 2.

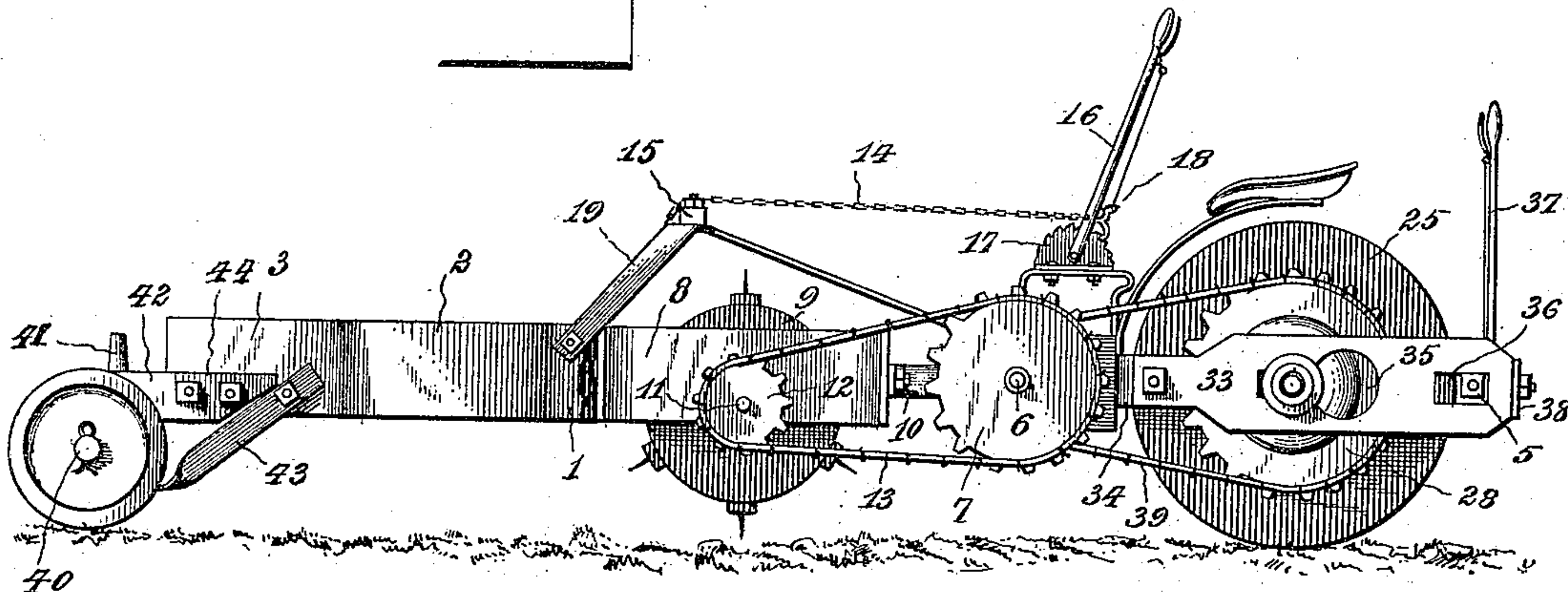


FIG. 3.

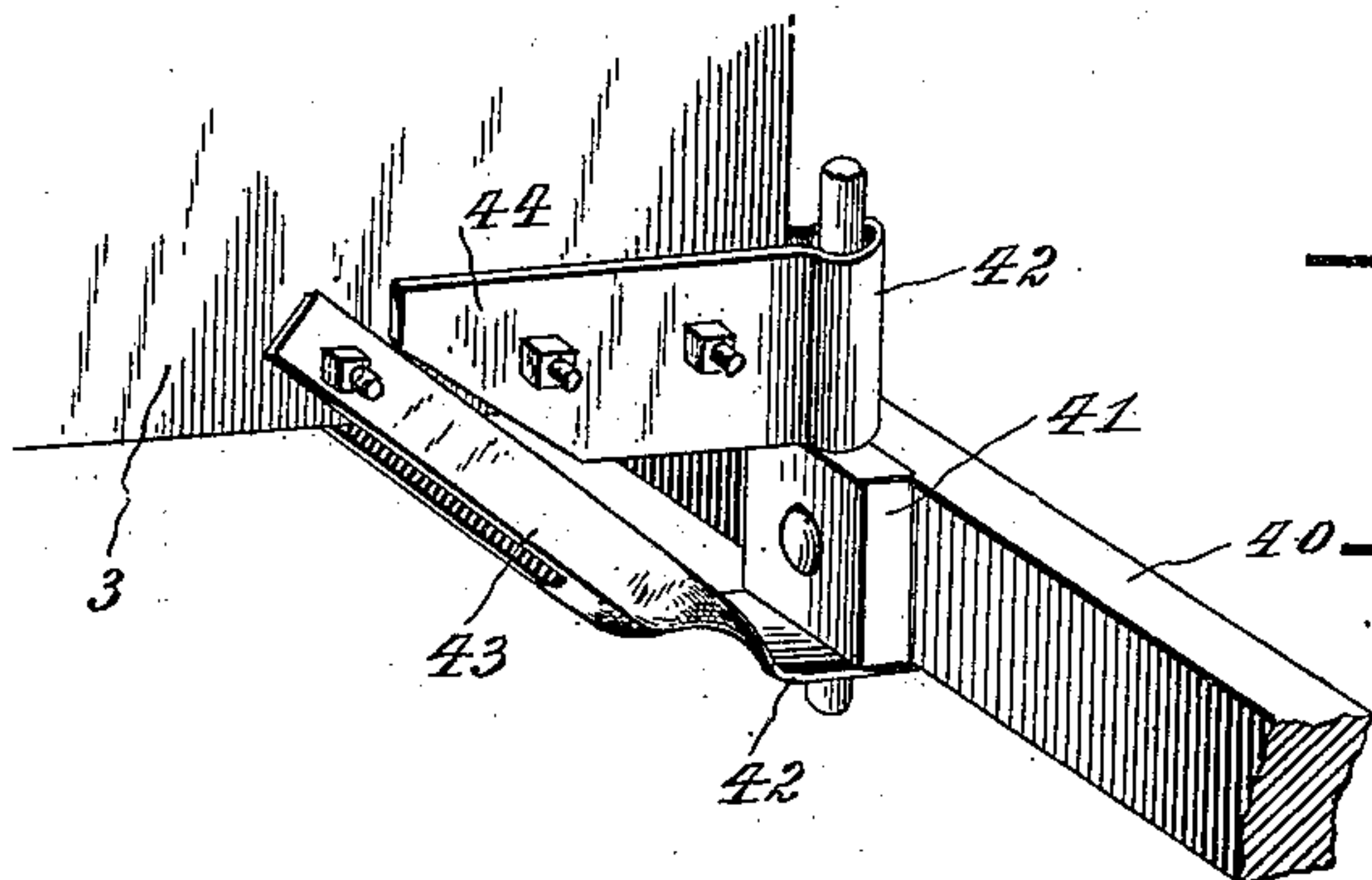
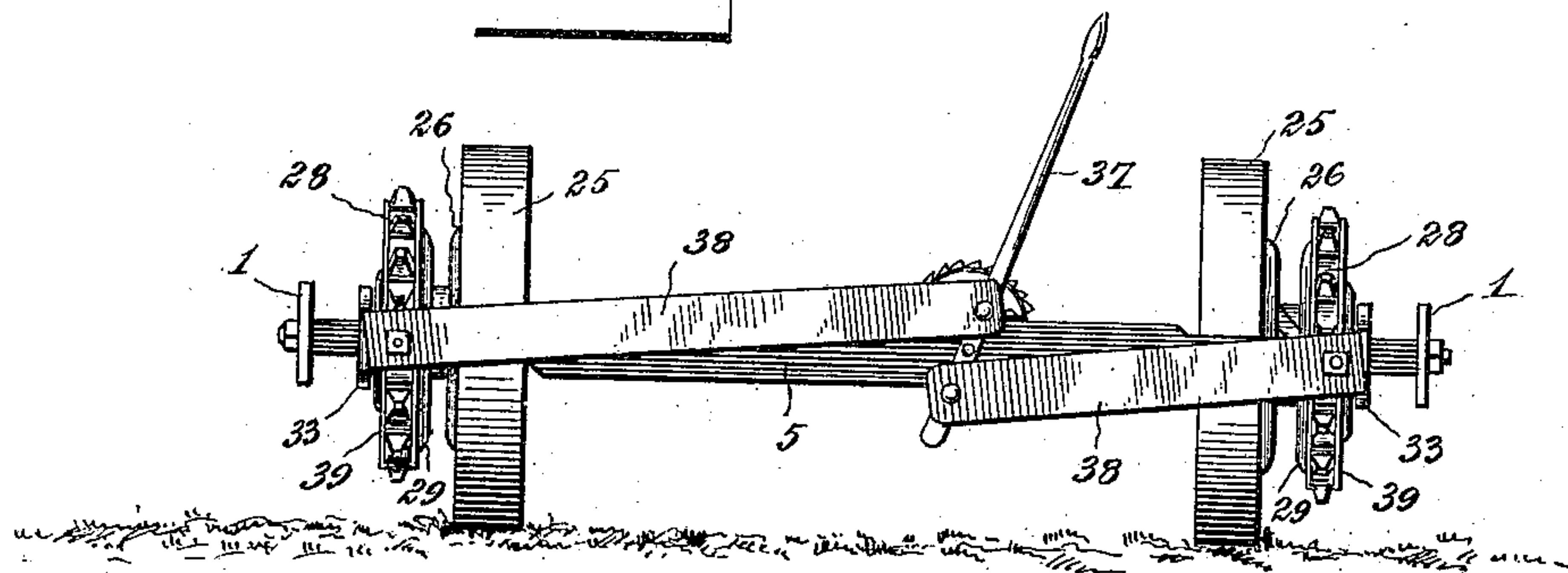


FIG. 6.

Witnesses

John F. Deufferwiel  
U. B. Hillyard.

By his Attorneys,

John Dieter Inventor

C. A. Snow & Co.



# UNITED STATES PATENT OFFICE.

JOHN DIETER, OF LOCKPORT, ILLINOIS.

## CLOD-CRUSHER.

SPECIFICATION forming part of Letters Patent No. 618,400, dated January 31, 1899.

Application filed April 12, 1898. Serial No. 677,305. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN DIETER, a citizen of the United States, residing at Lockport, in the county of Will and State of Illinois, have  
5 invented a new and useful Clod-Crusher, of which the following is a specification.

The purpose of the present invention is to devise a machine for pulverizing the soil after the ground has been broken or plowed, so  
10 as to prepare it for seeding, said machine being of improved construction and embodying novel features, which will be set forth at length hereinafter and noted more particularly in the subjoined claims.

15 The machine in its organization comprises a vertically-adjustable frame carrying the crushing cylinder or drum, which is studded with teeth to engage with clods to crush and break them up. The crushing-cylinder is  
20 rotated at a higher rate of speed than would result if it were turned upon its axis by coming in contact with the ground, thereby insuring the crushing and pulverizing of lumps and clods of earth. A train of connections  
25 is interposed between the crushing-cylinder and the drive-wheel, so as to rotate the crushing-cylinder at a relatively higher rate of speed, and this train embodies a clutch mechanism whereby the crushing-cylinder can be  
30 thrown in and out of gear at the will of the driver.

For a full understanding of the merits and advantages of the invention reference is to be had to the accompanying drawings and  
35 the following description.

The improvement is susceptible of various changes in the form, proportion, and the minor details of construction without departing from the principle or sacrificing any  
40 of the advantages thereof, and to a full disclosure of the invention an adaptation thereof is shown in the accompanying drawings, in which—

Figure 1 is a top plan view of a clod-crusher  
45 constructed in accordance with this invention. Fig. 2 is a side view, the rear frame-bar being removed. Fig. 3 is a rear view of the means for throwing the crushing-cylinder into and out of gear. Fig. 4 is detail section  
50 of a drive-wheel, showing the clutch mechanism and the parts cooperating therewith. Fig. 5 is a detail view, in perspective, of one

of the sprocket-wheels slidably mounted upon the axle of a drive-wheel and the sleeve upon which it is mounted. Fig. 6 is a detail view  
55 of the means for pivotally supporting the front axle.

Corresponding and like parts are referred to in the following description and indicated in the several views of the accompanying  
60 drawings by the same reference characters.

The frame comprises side bars 1, which have their front end portions forwardly convergent, as shown at 2, and brought together, forming a front extension, as shown at 3. A  
65 transverse bar 4 connects the side bars 1 at their front ends, and a bar 5 connects the rear ends of the said side bars. An intermediate bar 6, parallel with the front and rear bars 4 and 5, connects the bars 1 about midway of  
70 their ends and supports twin sprocket-gears 7 at its ends. The twin sprocket-gears have their toothed portions of different diameters, so as to multiply the speed of the crushing-cylinder in the manner presently to be de-  
75 scribed.

A rectangular-shaped frame 8 supports the crushing-cylinder 9 and has pivotal connection with the intermediate bar 6 by means of a series of hinge-brackets 10, which are firmly  
80 attached to the rear bar of the frame 8 and have eyes or bearing at their rear ends to receive reduced parts of the bar 6, with which they have a hinge connection, so as to admit of the frame 8 and the crushing-cylinder moving vertically according to the desired adjustment required. The crushing-cylinder is  
85 composed of circular supports, secured upon a shaft 11, and toothed bars, the latter applied to the said supports. The shaft 11 is jour-  
90 naled at its ends in end bars of the frame 8 and its end portions project beyond the end bars of the frame and receive sprocket-gears 12, which are connected by sprocket-chains 13 with the larger sprocket-gears of the twin  
95 sprockets 7. Chains or like flexible connections 14 are secured at their front ends to the front portion of the frame 8 and pass over a bar 15 and connect at their rear ends with an operating-lever 16, which is fulcrumed to a  
100 toothed standard 17, provided with a hand-operated latch 18, which coöperates with the toothed standard to secure the lever and the frame bearing the crushing-cylinder in an ad-



justed position, said lever and toothed standard being supported on the main frame. The bar 15 is located over the crushing-roller and is supported at its ends upon braces 19, 5 having their rear ends connected to the intermediate bar 6 and their front ends to the side bars 1. By operating the lever 16 the crushing-cylinder can be elevated, so as not to come in contact with the ground, or can be 10 lowered to any required position, so as to enable its teeth to penetrate the ground to a greater or less distance.

A transverse bar 20 is arranged parallel with the bars 5 and 6 and a short distance in 15 the rear of the intermediate bar 6, to which it is connected by braces 21. U-shaped frames 22 connect the end portions of the bar 20 with the bar 5, and their middle parts extend longitudinally and parallel with the side 20 bars 1. A stub-axle 23 is provided for each of the frames 22 and is provided at one end with a cross-piece 24, which is bolted to the longitudinal portion of each of the frames 22. Ground-wheels 25 are mounted upon the 25 stub-axes 23 and are provided upon their outer sides with ratchet-teeth 26. An axle 27 is provided for each side of the machine and is supported at its inner end by means of a stub-axle 23 and at its outer end by passing through an opening in the adjacent side 30 bar 1. A sprocket-wheel 28 is slidably mounted upon each axle 27 and is provided at its inner face with ratchet-teeth 29, which cooperate with the ratchet-teeth 26 and unitedly 35 therewith form a clutch for connecting the sprocket-wheel and ground-wheel, so as to cause them to rotate in unison when the machine is in gear. A sleeve 30 is mounted to turn upon each of the axles 27 and has 40 a feather-and-spline connection with the sprocket-wheel 28, so as to rotate therewith. This sleeve has a collar 31 at its outer end, and a spring 32 is interposed between the collar 31 and the outer end of the hub of the 45 sprocket-wheel 28 and serves to hold said sprocket-wheel in clutched engagement with the ground or drive wheel. The sprocket-wheel 28 is mounted upon the sleeve 30, so as to move thereon toward and from the adjacent 50 ground-wheel.

Spring shipper-bars 33 have connection at their front ends with arms 34, secured to the bar 20 and projecting therefrom, and these shipper-bars have slots 35, which receive the 55 outer ends of the hubs of the sprocket-wheels 28, said hubs being grooved to receive and pass through the slots 35, whereby positive connection is had between the sprocket-wheels and the shipper-bars, so that upon 60 moving the latter the sprocket-wheels are thrown into and out of gear with the drive-wheels. One end of the slot 35 is enlarged to admit of the flanged end of the hub of the sprocket-wheel passing therethrough when 65 engaging or disconnecting the shipper-bar. The rear end portion of each shipper-bar has an opening 36 for the passage therethrough

of the rear bar 5. A lever 37 is fulcrumed to the rear bar 5, and links 38 connect the lever 37 with the rear ends of the shipper- 70 bars, thereby admitting of the sprocket-wheels 28 being simultaneously thrown in and out of engagement with the ground or drive wheels. Sprocket-chains 39 connect the sprocket-wheel 28 with the smaller spur- 75 gears of the twin sprockets 7.

The front axle 40 is provided centrally with an iron 41, having upper and lower journals 42 in vertical alinement, the lower journal obtaining bearing in a brace 43, secured to 80 the front extension 3, and the upper journal obtaining a bearing in a clip 44, secured to the said front extension 3. The draft is applied to the front axle in any desired manner. The axle is provided at its ends with ground- 85 wheels, which support the front end of the machine.

By reason of the train of connections between the ground-wheels and the crushing-cylinder the latter is driven at a compara- 90 tively high rate of speed, thereby breaking up and pulverizing the soil and placing the land in condition for the reception of the seed. It will be noticed that the twin sprockets 7 are in axial alinement with the hinge or 95 pivotal connection of the frame 8. Hence said frame can be adjusted vertically at its free end to raise or lower the crushing-cylinder without in any manner affecting the tension of the sprocket-chains 13 and 39. The outer 100 ends of the hubs of the sprocket-wheels 28 are annularly grooved to operate in the slots 35, and said grooves are of a width to admit of the sprocket-wheels moving outwardly independently of the shipper-levers, so as to ad- 105 mit of the ground-wheels rotating unequally, as when making a curve or a turn.

Having thus described the invention, what is claimed, and desired to be secured by Letters Patent, is— 110

1. In a clod-crusher, the combination with a frame adapted to have the draft applied thereto, and a second frame having pivotal or hinge connection with the main frame and bearing a crushing-cylinder, of a bar on said 115 main frame located over the crushing-cylinder, an operating-lever provided with means for holding it in an adjusted position and supported by the main frame, and flexible connection passing over said bar between 120 said lever and the frame carrying the crushing-cylinder, substantially as and for the purpose set forth.

2. The combination with a frame, an intermediate transverse bar, a frame bearing a 125 crushing-cylinder and having a pivotal or hinge connection with the intermediate bar, and means for raising and lowering the frame bearing the crushing-cylinder, of differential twin sprocket-gears mounted upon the said 130 intermediate bar, drive-chains connecting the crushing-cylinder with the twin sprockets, ground-wheels, sprocket-gears having clutched engagement with the ground-wheels,



and means for connecting the sprocket-wheels with the twin sprocket-gears, substantially as set forth.

3. The combination with a main frame comprising side and transverse bars, and a frame bearing a crushing-cylinder and having pivotal or hinge connection with the main frame and adapted to be raised and lowered, of ground-wheels, sprocket-wheels adapted to have clutched engagement with the ground-wheels and operatively connected with the crushing-cylinder for rotating it as the machine is drawn over the field, springs for holding the sprocket-wheels in clutched engagement with the ground-wheels, and shipper-bars under the control of the driver for throwing the sprocket-wheels out of gear and constructed to admit of said sprocket-wheels having an independent limited movement, whereby they will admit of the ground-wheels moving at different rates of speed, substantially as set forth.

4. The combination with the main frame, and a frame having pivotal or loose connection with the main frame so as to be capable of vertical adjustment and bearing a crushing-cylinder, of ground-wheels, sprocket-wheels mounted in line with the ground-wheels and capable of being thrown into and out of clutched engagement therewith and operatively connected with the crushing-cylinder, sleeves in line with the ground-wheel and having a feather-and-spline connection with the sprocket-wheel and provided at their outer ends with collars, and springs mounted upon the sleeves and interposed between the collars thereof and the outer ends of the hubs of the sprocket-wheel, substantially as set forth.

5. The combination with the main frame and a pivoted frame bearing a crushing-cylinder and capable of vertical adjustment, of ground-wheels, gear-wheels having clutched engagement with the ground-wheels and op-

eratively connected with the crushing-cylinder for imparting a rotary movement thereto, shipper-bars having engagement with the gear-wheels and throwing them into and out of action and an operating-lever having connection with the shipper-bars, substantially as set forth.

6. The combination with the frame having a front extension and provided with means for tilling the soil, of an axle provided with ground-wheels, a block secured to the axle and having upper and lower journals in vertical alinement, a clip secured to the said extension and receiving the upper journal, and a brace likewise applied to the said extension and receiving the lower journal of the said iron, substantially as set forth.

7. In combination, a main frame comprising an intermediate and side bars, a frame bearing a crushing-cylinder and having a pivotal or hinge connection with the intermediate bar, means for raising and lowering the frame bearing the crushing-cylinder, differential sprocket-gears mounted upon the end portions of the intermediate bar and having connection with the crushing-cylinder for transmitting motion thereto, ground-wheels, sprocket-gears mounted in line with the ground-wheels adapted to have clutched engagement therewith, means for connecting the sprocket-gears with the aforesaid differential gears, and shipper-bars adapted to be simultaneously actuated for throwing the sprocket-gears out of action, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JOHN DIETER.

Witnesses:

JOHN BECK,  
THOS. FEELY.