

(No Model.)

L. SCOFIELD.

DRILL ATTACHMENT FOR PLANTERS.

No. 383,994.

Patented June 5, 1888.

Fig. 1.

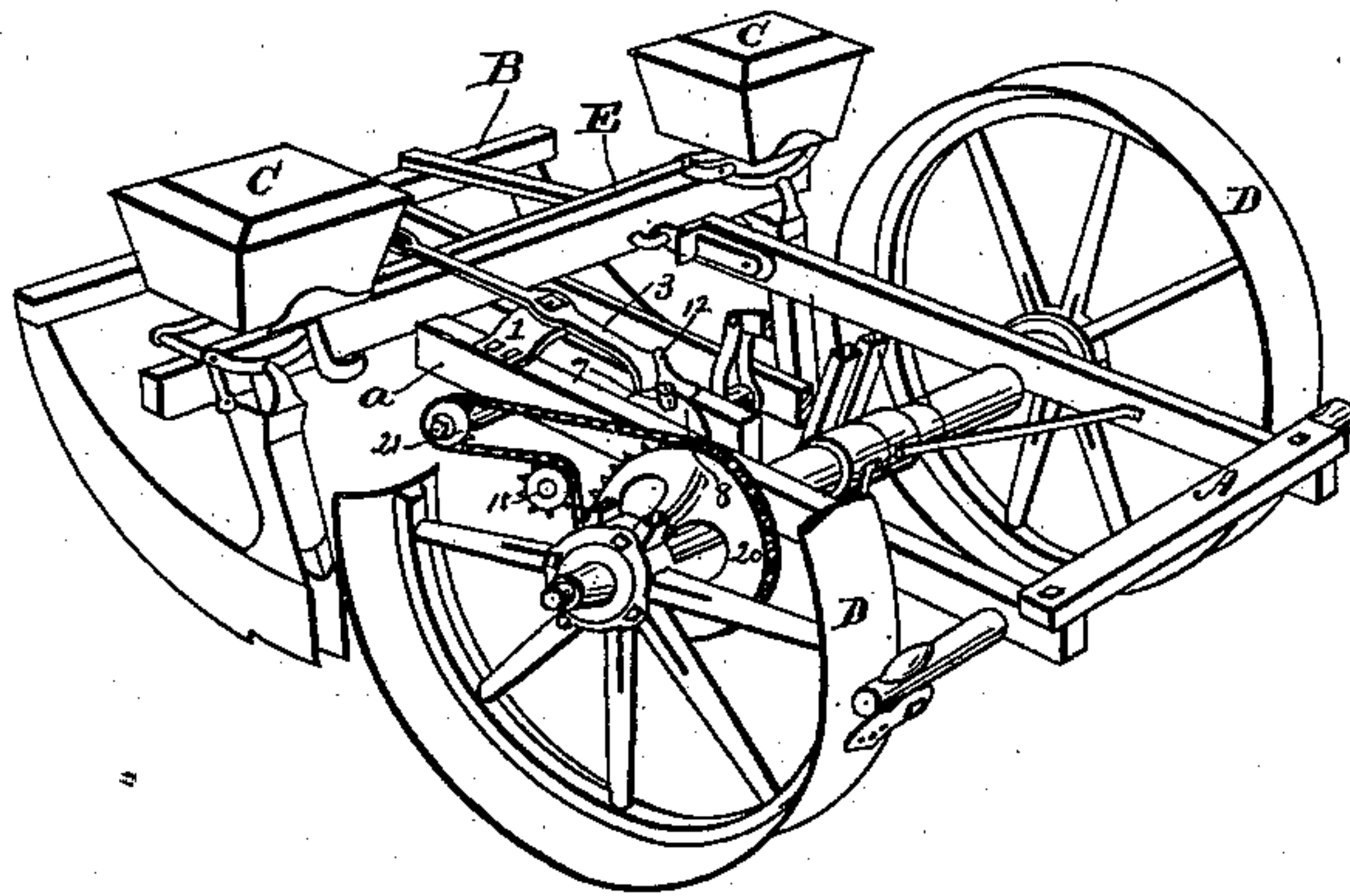


Fig. 2.

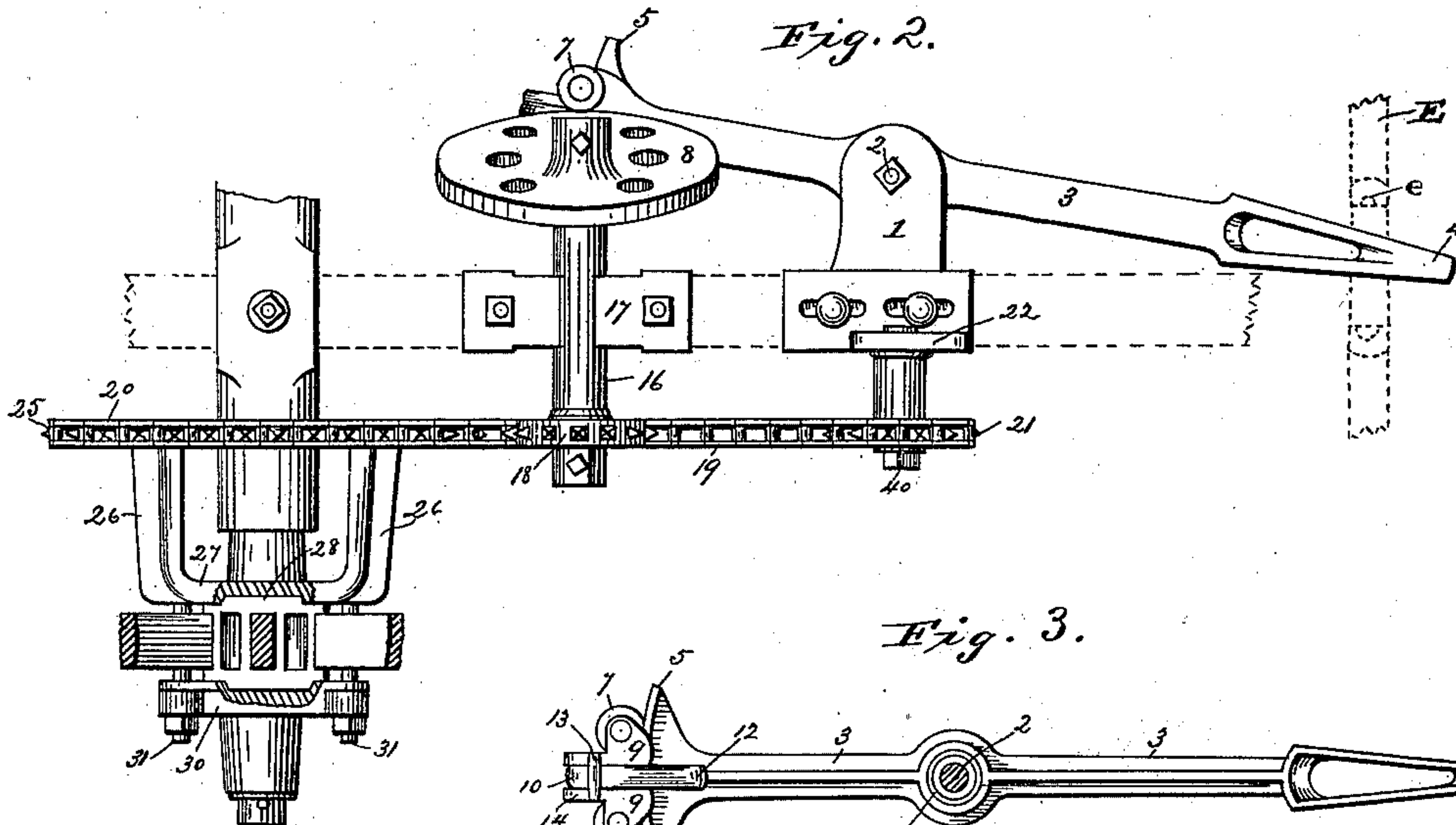


Fig. 3.

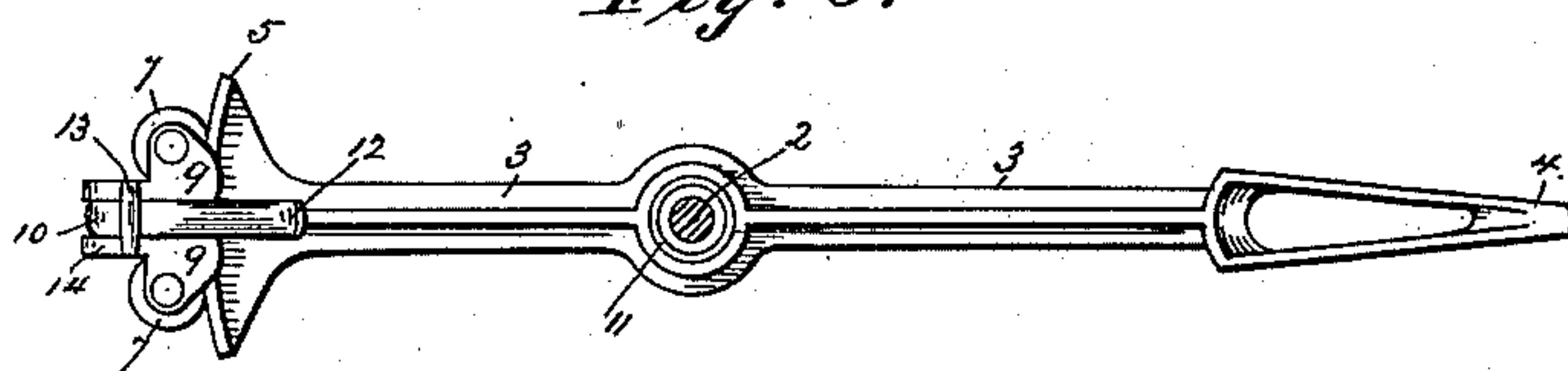
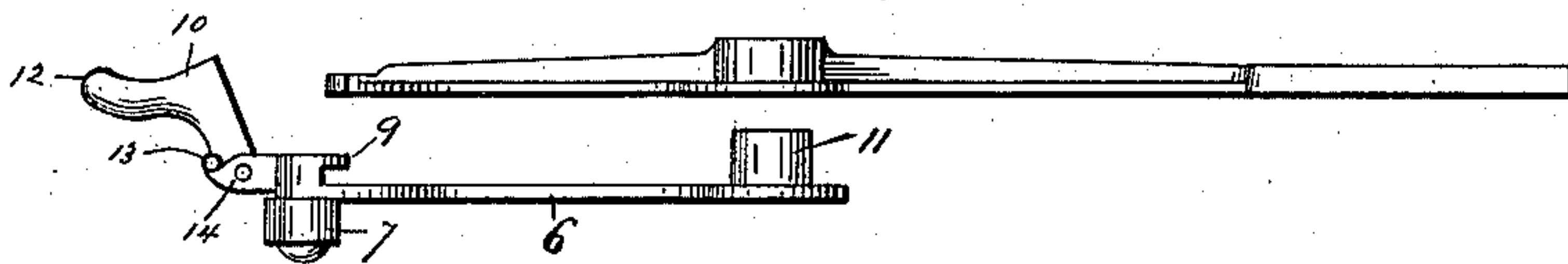


Fig. 4.



Witnesses.  
Chas. R. Burr.  
A. S. Stewart.

Inventor.  
Levi Scofield.  
By Church & Church,  
his Attorneys.



# UNITED STATES PATENT OFFICE.

LEVI SCOFIELD, OF GRAND HAVEN, MICHIGAN, ASSIGNOR TO THE CHALLENGE CORN PLANTER COMPANY, OF SAME PLACE.

## DRILL ATTACHMENT FOR PLANTERS.

SPECIFICATION forming part of Letters Patent No. 383,994, dated June 5, 1888.

Application filed March 5, 1888. Serial No. 266,179. (No model.)

*To all whom it may concern:*

Be it known that I, LEVI SCOFIELD, of Grand Haven, in the county of Ottawa and State of Michigan, have invented certain new and useful Improvements in Drill Attachments for Planters; 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 figures and letters of reference marked thereon.

This invention relates to an improved drill attachment designed more especially for use upon corn-planters as a substitute for and interchangeable with the check-rower attachments; and it consists in the novel and improved construction, combination, and arrangement of the several co-operating elements, as hereinafter described and claimed.

In the drawings, Figure 1 is a view in perspective of a portion of a planter with the improvements applied thereto. Fig. 2 is a bottom plan view of my improved attachment. Fig. 3 is a top plan view of the actuating-lever. Fig. 4 is a side elevation of the actuating-lever and driving-link separated.

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

The letter A designates the main frame, B the runner-frame, and C the seed-hoppers. The runner-frame is hinged or flexibly attached to the main frame, and the latter is supported upon wheels D, while the seeding devices or feeding mechanisms, of which two are shown, are attached together and operated in unison by a connecting-bar, E. This connecting-bar is furnished with two adjustable shoulders or abutments, *e*, between which a portion of the reciprocating driving mechanism works to operate the seeding devices.

Upon the main frame A, and preferably to one of the side bars *a*, thereof, is secured a bracket, 1, carrying the pin or stud 2, upon which is hung a lever, 3, provided at one end with a taper or wedge, 4, and at the other with a notched segment, 5. Upon the stud 2 is also mounted a link or arm, 6, to the outer or rear portion of which are attached two studs or rollers, 7, embracing the edge of a cam-wheel, 8. Said link 6 also carries or

is provided with inwardly-projecting flanges 9, forming guides for the segmental end of the lever 3 to work in, and between these flanges, or at any other convenient point, is mounted a pivoted dog, 10, adapted to enter the notch or otherwise engage the segment to lock the lever 3 and link 6 together.

Instead of pivoting both the lever 3 and link 6 directly upon the stud or pin 2, I prefer to pivot the one—say the link—directly upon the stud, and provide it with a nut or collar, 11, to receive the other member, as in this way a larger and more secure bearing is formed and the two parts are brought nearer together.

The pivoted dog 10, which constitutes a detachable connection or lock, is provided with a thumb-piece, 12, and the material of which it is composed is so disposed relatively to the pivotal point of attachment that the dog is held in engagement with the segment on lever 3 by gravity, and when disconnected, as when the dog is thrown back, the preponderance of weight is shifted in rear of the pivot and the dog is supported by lugs or shoulders 13, engaging supports or shoulders 14 on the link.

The main purpose and function of the segmental form given to the rear end of the lever 3 are to guide and retain the lever in operation relative to the link while the dog is disengaged, and to furnish a support upon which the dog rests when thrown down until its engaging portion arrives opposite the notch in the lever 3.

As is obvious, any suitable actuating devices may be employed for reciprocating the link, as the latter constitutes the member through which the power devices are immediately connected to the lever and through the latter to the seed-slide; but I prefer, for various reasons, to employ a disk cam, 8, secured to a shaft, 16, mounted in a bearing, 17, adjustably secured to the bar *a*, and upon the opposite end of said shaft is mounted a sprocket-wheel, 18, receiving motion from a drive-chain, 19. This chain passes around the driving-gear 20, over the sprocket-wheel 18, and around a sprocket or tightener pulley, 21, supported in adjustable bearings 22 in advance of the sprocket-wheel 18.

The driving-gear 20 is, as I believe, of novel



and improved construction, adapted for application to the hub of the supporting-wheel D, its attachments being self-centering, so that it cannot only be readily applied and removed, but also quickly adjusted and adapted without special skill to different wheels. To this end the toothed rim or annulus 25 is attached by arms 26 to a plate, 27, having a large central opening and an annular groove or recess adapted to receive and fit upon a corresponding projection or bearing, 28, formed on the inner end of the hub.

A plate or annulus, 30, with large central opening and annular groove or recess similar to that in plate 27, is adapted to fit the outer end of the hub, so that when the two plates 27 and 30 are placed upon the opposite ends of the hub and drawn or clamped thereon by bolts 31, passing between the spokes of the wheel, the driving-gear will be held centrally of the hub and firmly secured thereto.

The projection 28, referred to, being formed upon the hub of the wheel, is the bead usually formed at or near the spoke-sockets of metallic hubs, and, as the latter are manufactured of standard size and dimensions, the driving-gear can readily be secured centrally of said hubs, and by securing the gear portion or annulus to the hub attachment by arms the said gear or driving portion is removed from the wheel and brought more nearly in line with the sprocket-wheel 18.

From the description and illustration furnished it is apparent that to remove or apply the drill attachment but three sets of bolts or equivalent clamping devices have to be manipulated—*i. e.*, those for clamping the driving-gear upon the hub of the wheel, those for fastening the bearing of the shaft 16 to its supporting-bar, and those for securing the bracket carrying the pivot of lever 3 and the bearing of the tightening-wheel to the support, and when it is desired to arrest the feed or start the latter while the machine is in motion it is only necessary to operate the detent or dog so that it shall engage or be held removed from the notch in the lever.

When, as in the illustration given, the lever 3 is supported upon the main frame and the seeding devices upon a frame pivotally connected thereto, the raising and lowering of the connection to elevate or depress the runners shifts the point of contact between the stops and lever longitudinally of the latter, thereby increasing or diminishing the effective length of the lever, and thus varying the throw of the seed-bar. To overcome or avoid this defective action, which would necessarily occur were a straight-sided lever employed for engaging the stops on the feed-bar, I form the latter tapering, the side faces converging toward the end of the bar, so that when the feed-bar is brought nearer to or carried away from the pivot of the lever, as when the runner-frame is elevated or depressed, the difference in the length of the arc traversed by the lever at the point of contact with the stops will be com-

pensated for by the increase or diminution in thickness; or, in other words, as the lateral movement of the lever diminishes the point of contact is advanced in the direction of the lateral movement, so that the extreme limits of movement will remain the same whether the leverage be increased or diminished. It is of the utmost importance that this uniformity in the movement of the feed-bar should be preserved in order that the feeding devices may operate at the end of each reciprocation and at predetermined intervals.

The sprocket-wheel 18, through which motion is communicated to the cam, is detachably secured to its shaft 16, so that wheels of different diameters or sizes may be applied to vary the speed of the feeding devices proportionally to the progressive movement of the machine, and thereby adjust or regulate the distance apart at which the seed is dropped. To accommodate such adjustment without at the same time rendering necessary the shortening or lengthening of the chain, as heretofore, I mount the pulley 21 upon a bolt or axis, 40, and connect the latter to its bearing or bracket 22 in a manner to permit of adjustment in a direction toward and from the sprocket-wheel 18, as by securing said bolt in a slot formed in the supporting-bracket 22, whereby, when the sprocket-wheel on shaft 16 is replaced by one of a different diameter, instead of lengthening or shortening the chain by inserting or removing links, the pulley 21 is shifted to accommodate and tighten the chain, after which it is secured in position.

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

1. In a drill attachment such as described, the combination, with the feed-bar provided with stops or shoulders, of a lever for actuating said feed-bar, provided with tapering sides at the point of contact with said stops, substantially as described.

2. In a drill attachment such as described, in which the feeding devices are mounted upon a frame flexibly connected to another or main frame, the combination, with the feed-bar provided with stops, of the actuating-lever supported upon the main frame, and provided with the inclined or tapering engaging portion interposed between and acting against the stops on the feed-bar, substantially as described.

3. In a drill attachment such as described, and in combination with the feed-bar, a lever and a link or plate supported upon coincident axes, driving mechanism for reciprocating the link, and a catch or dog connecting said lever and link, substantially as described.

4. In a drill attachment such as described, the combination, with the seeding devices, of the lever provided with the notched segmental end, the pivoted link, guides or ways connecting said link and lever to permit the one to vibrate independently of the other, and a dog or latch for connecting said link and lever to cause them to vibrate in unison, substantially as described.



5. In a drill attachment such as described, and in combination with the feeding mechanism, a lever for actuating the latter pivotally supported upon a link concentric with the pivot of the latter, a clutch or catch for connecting said link and lever, and devices acting upon the link to reciprocate the latter, substantially as described.

6. In a drill attachment such as described, the combination, with the feeding devices mounted on the runner-frame, of a lever mounted upon the main frame and provided at one end with the tapering sides engaging the feed-bar and at the opposite end with a notched segmental plate, the link pivotally supported on an axis concentric with that of the lever, guides, and a catch or dog connecting the lever and link, and a cam engaging the link to reciprocate the latter, substantially as and for the purpose set forth.

7. In a drill attachment such as described, the combination, with the actuating-lever for operating the feeding devices, of an independently-reciprocating link connected to the lever by a detachable dog or catch, and a cam-disk operating between pins or rollers on said link, substantially as described.

8. In a drill attachment such as described, the combination, with the actuating-lever provided with the notched arc shaped plate, of the reciprocating link guided on said arc-shaped plate, and the pawl or dog pivoted upon said plate and provided with shoulders, said dog being held by gravity in engagement with the notch in the lever and when withdrawn and turned back sustained in like manner upon the shoulders, substantially as and for the purpose set forth.

9. In a drill attachment such as described, and as a means for detachably connecting and centering the driving-gear upon the hub of the wheel, the combination, with said driving-gear provided with the annular grooved plate for application to the inner end of the hub, of the outer plate correspondingly grooved and fitted to receive the outer end of the hub, and the clamping-bolts inserted between the spokes to clamp and hold the plates upon the hub, substantially as described.

10. In a drill attachment such as described, and in combination with the feeding devices

and supporting-wheel, a driving-gear detachably applied to the hub, the cam-shaft, and sprocket-wheel, the tightening-wheel, and the chain encircling the driving and tightening wheels and passing over the intermediate sprocket-wheel, substantially as described.

11. In a drill attachment such as described, and in combination with the feeding devices on the runner-frame, the actuating-lever and its driver, the link supported upon a single bracket and connected by a movable dog or catch, the cam supported upon a shaft carrying a sprocket-wheel, and the chain engaging and driving said sprocket-wheel, substantially as described.

12. In combination with the frame of a planter, the improved drill attachment constructed substantially as described, and comprising the following parts detachably secured to the frame, viz: the bracket forming a support for the lever and link, the bearings for the tightener-pulley, and shaft-carrying cam and sprocket-wheel, and the driving-gear applied to the wheel-hub, said parts being constructed and combined for co-operation with the chain and feeding mechanisms, substantially as described.

13. In a drill attachment such as described, the combination, with the frame and the cam-shaft and its detachable sprocket-wheel, of the chain engaging said sprocket-wheel and a driving-wheel, and the tightener-wheel mounted on an axis adjustable with relation to the sprocket-wheel to accommodate interchangeable sprocket-wheels differing in diameter, substantially as described.

14. In a drill attachment such as described, the combination, with the frame, of the bracket supporting the cam-shaft, a sprocket-wheel detachably secured to said shaft, a driving-gear on the wheel, a chain passing around said last-named gear and engaging the sprocket-wheel, and the pulley 21, supported upon a bolt, the latter adjustably secured in a slot in a bracket attached to the frame, substantially as described.

LEVI SCOFIELD.

Witnesses:

E. G. BELL,  
W. C. SHELDON, Jr.