

(No Model.)

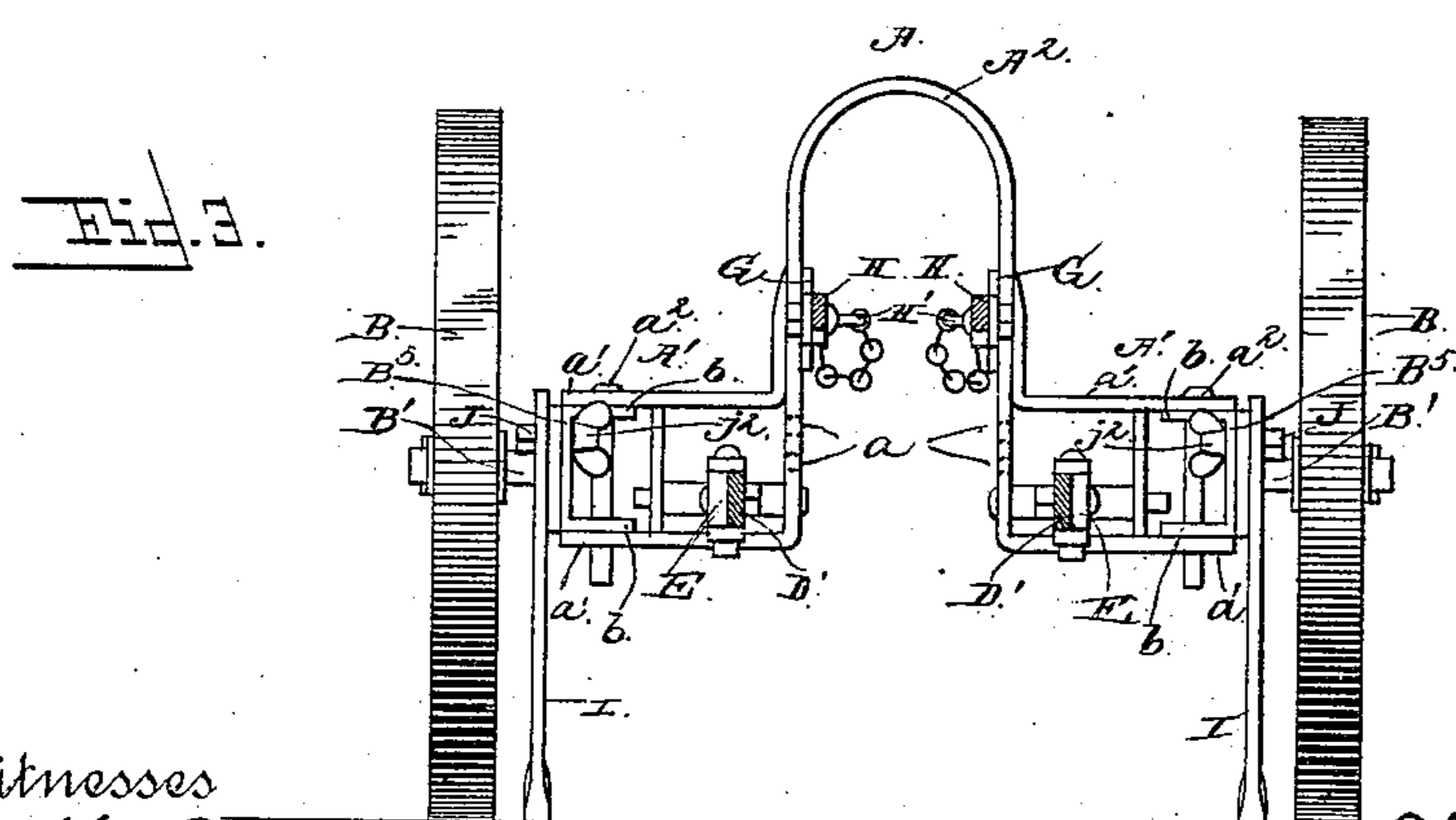
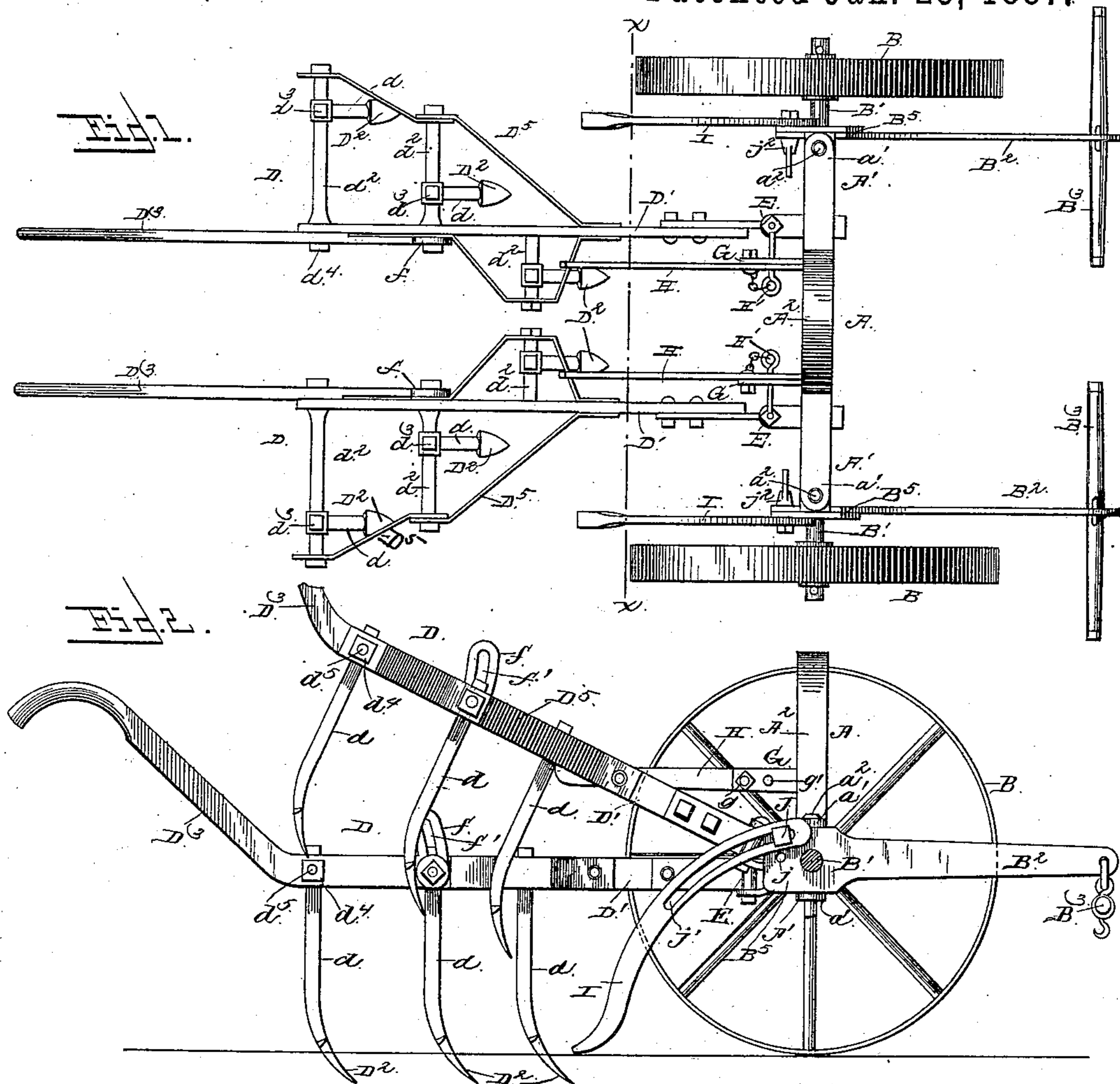
2 Sheets—Sheet 1.

A. ROBERTSON.

CULTIVATOR.

No. 356,504.

Patented Jan. 25, 1887.



Witnesses

Inventor

Alexander Robertson

By his Attorneys

N. PETERS, Photo-Lithographer. Washington, D. C.

(No Model.)

2 Sheets—Sheet 2.

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Fig. 4.

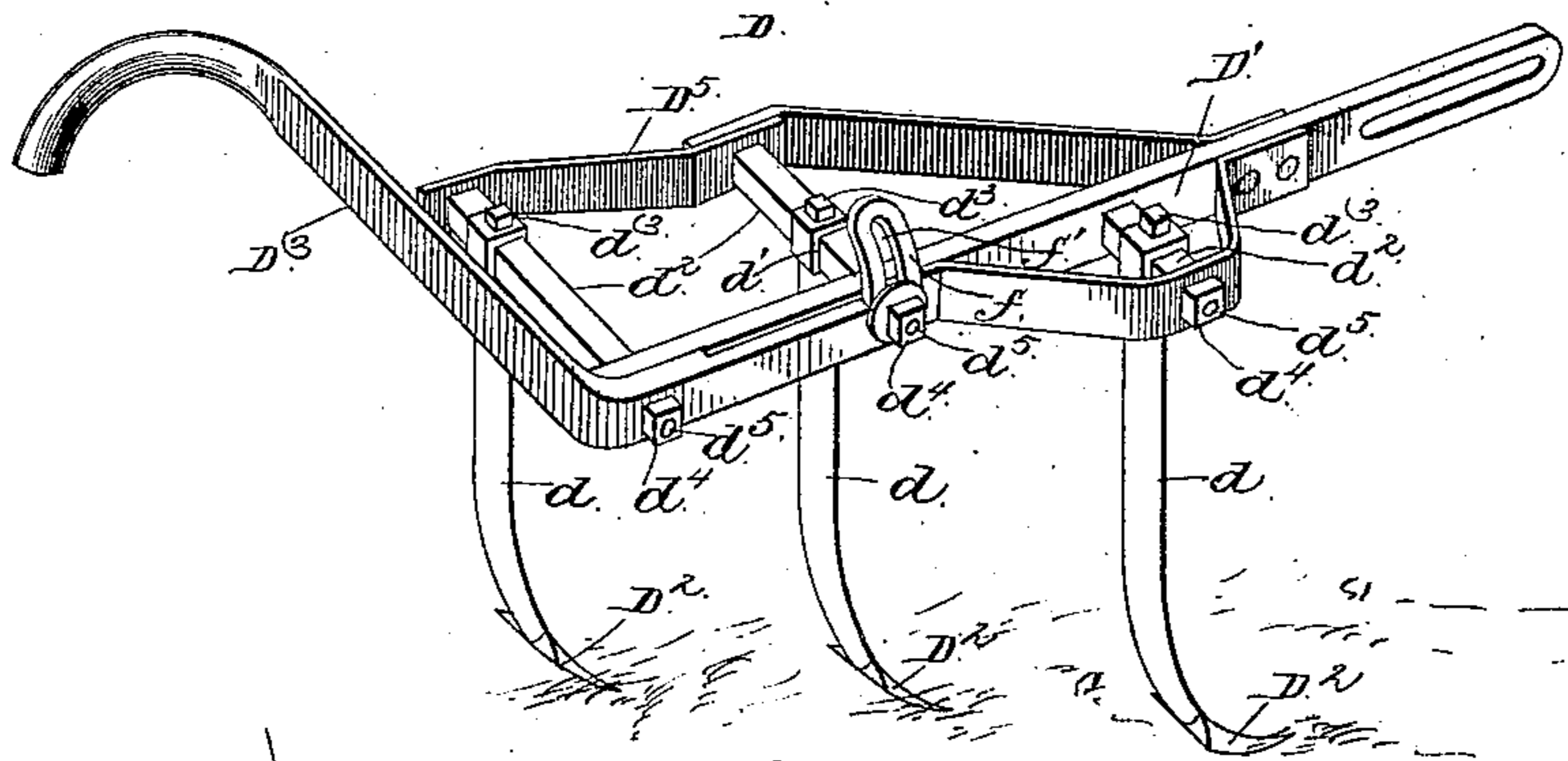


Fig. 5.

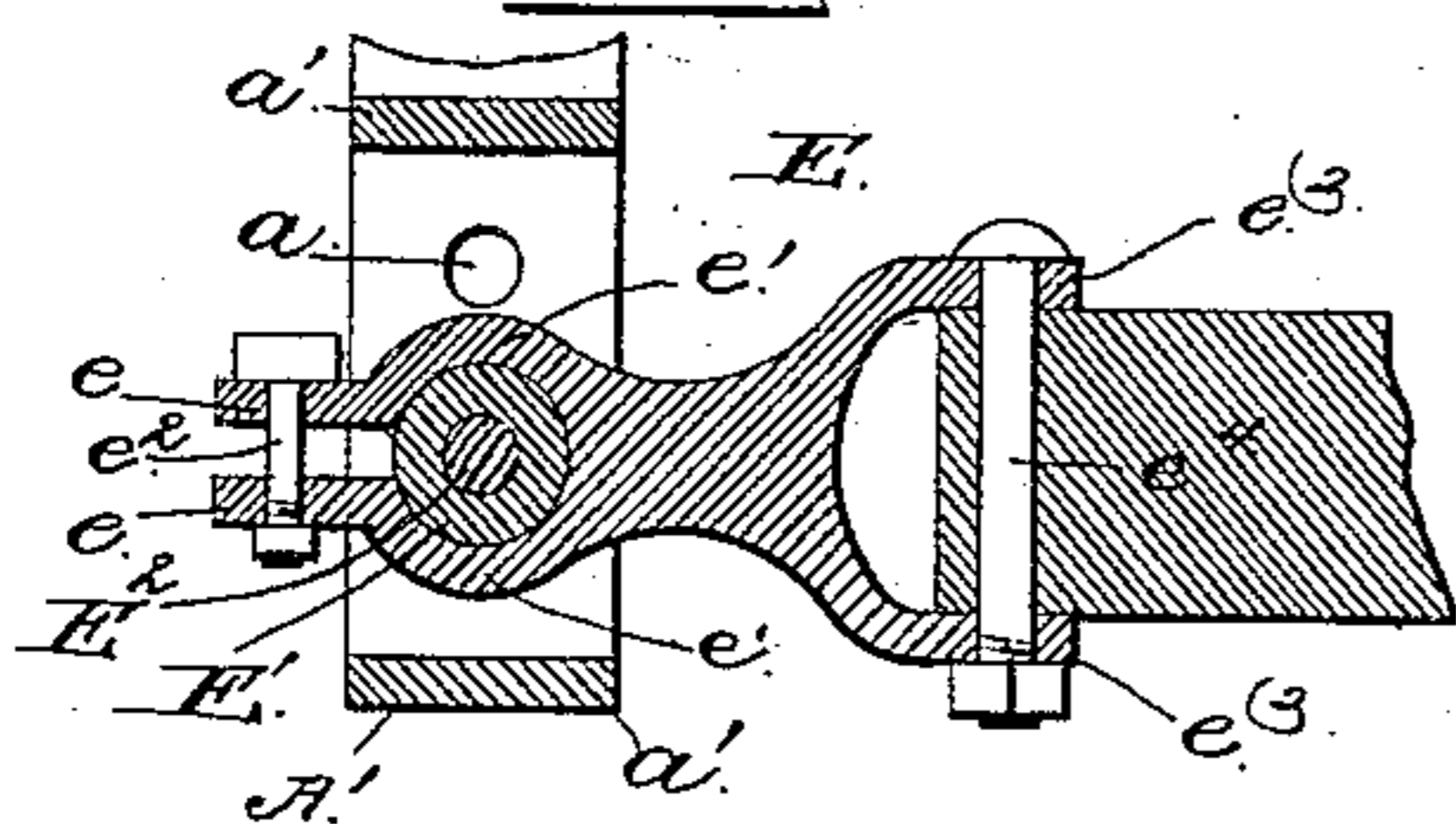


Fig. 6.

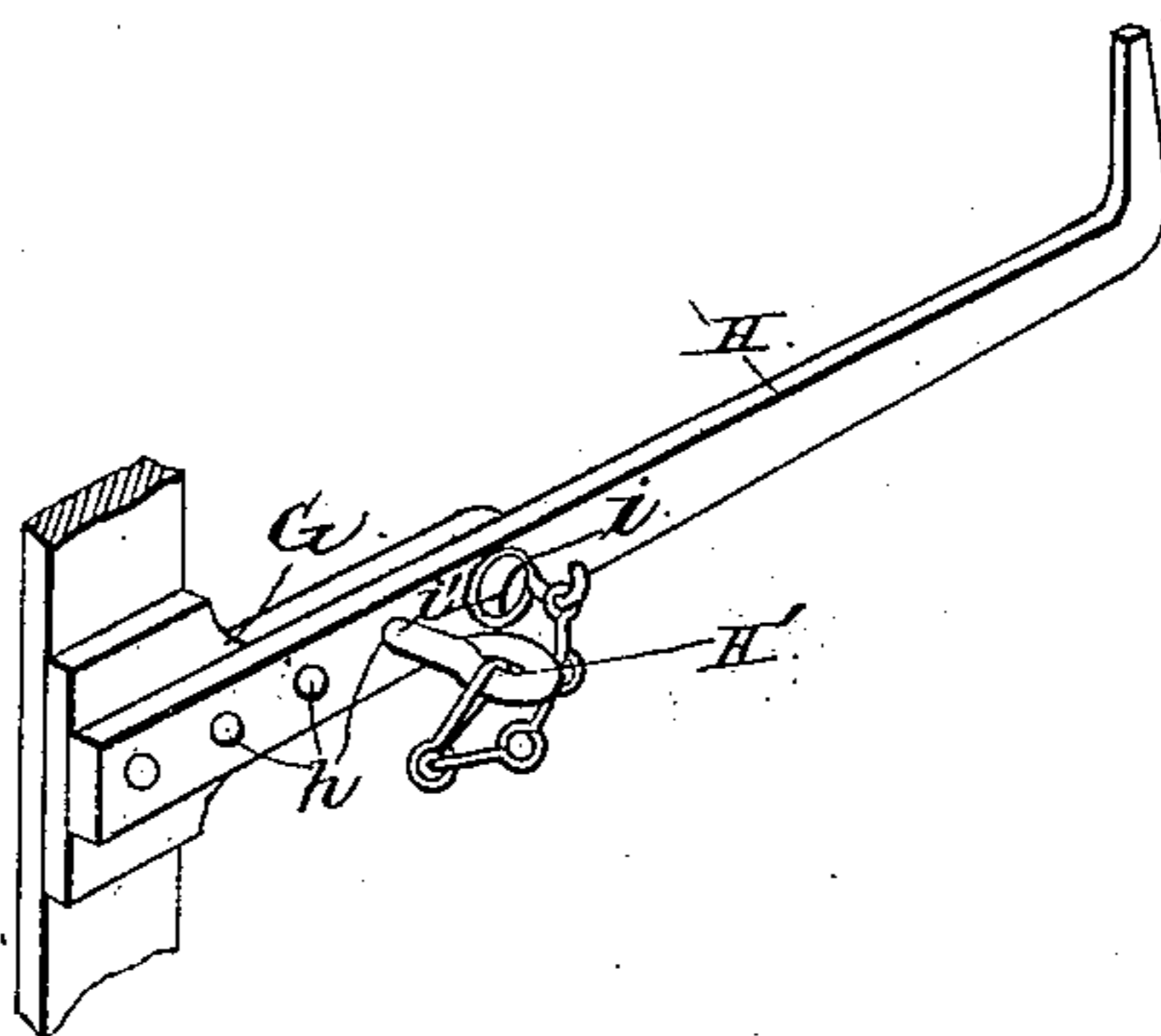
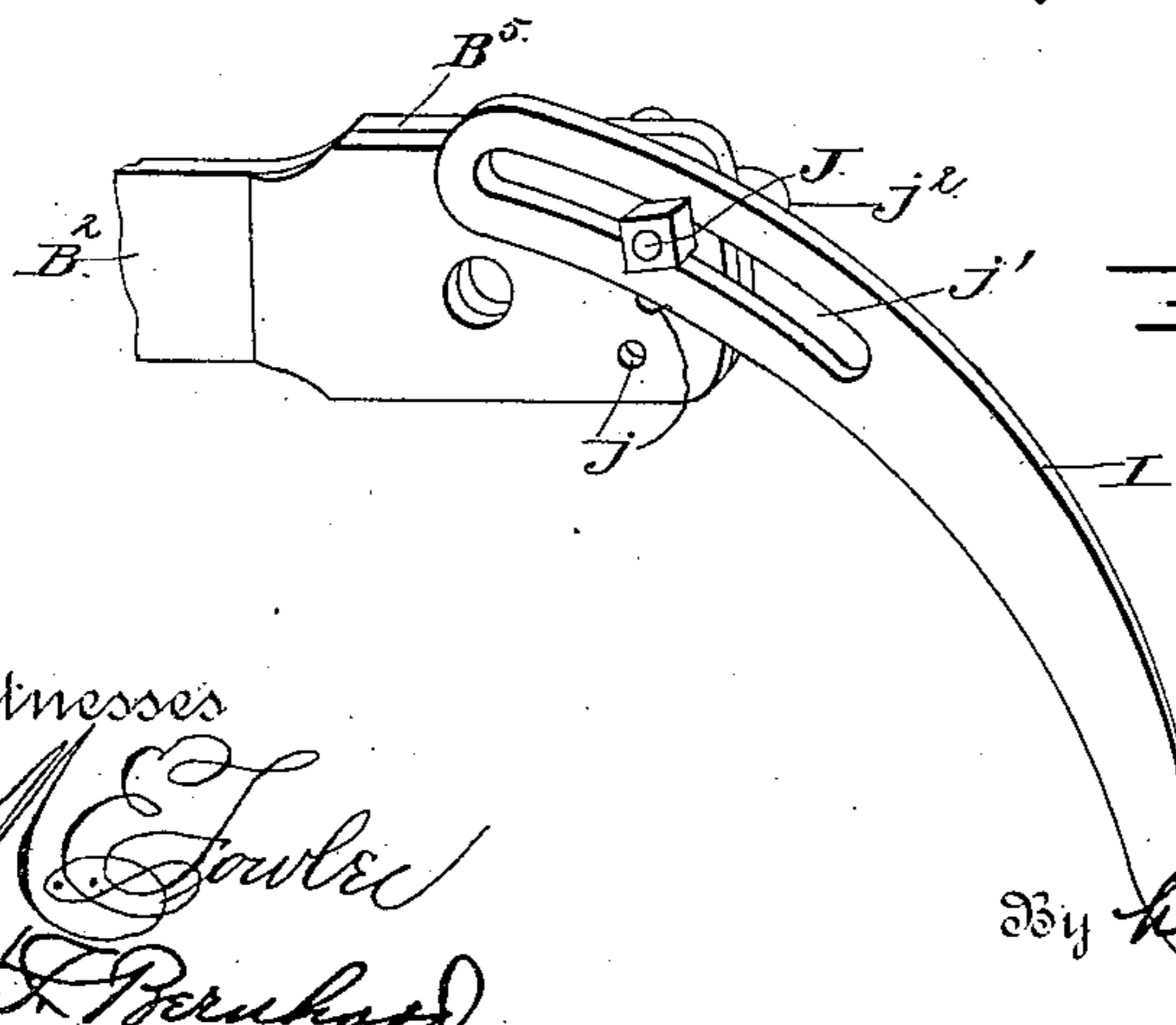


Fig. 7.



Witnesses

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UNITED STATES PATENT OFFICE.

ALEXANDER ROBERTSON, OF DOW CITY, IOWA.

CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 356,504, dated January 25, 1887.

Application filed October 18, 1886. Serial No. 216,554. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER ROBERTSON, a citizen of the United States, residing at Dow City, in the county of Crawford and State of Iowa, have invented a new and useful Improvement in Cultivators, of which the following is a specification.

My invention relates to improvements in cultivators; and it consists of the peculiar combination of devices and novel construction and arrangement of the various parts for service, substantially as hereinafter fully described, and particularly pointed out in the claims.

The object of my invention is to provide an improved cultivator which shall possess superior advantages over others which have preceded it in points of simplicity and durability of construction, effectiveness of operation, and cheapness of manufacture, as will more fully hereinafter appear.

In the accompanying drawings, which illustrate a cultivator embodying my improvements, Figure 1 is a top plan view. Fig. 2 is a side elevation, showing one of the trailing plows suspended from the carrying-frame of the cultivator. Fig. 3 is a cross-sectional view on the line *x x* of Fig. 1. Fig. 4 is a detached perspective view of one of the trailing plows. Fig. 5 is an enlarged central longitudinal sectional view through one of the couplings intermediate of the carrying-frame and one of the trailing plows. Figs. 6 and 7 are detached detail views of parts of my improvements.

Referring to the drawings, in which like letters of reference denote corresponding parts in all the figures, A designates the main or carrying frame of a cultivator embodying my improvements; B, the carrying or supporting wheels therefor; D, the trailing plows, and E the couplings intermediate of the carrying-frame and the trailing plows, the peculiar construction and arrangement of the several parts being hereinafter more fully described.

The main or carrying frame A of my improved cultivator comprises the side sections, A', and the vertical arched central section, A², connecting the side sections, the parts being very rigidly and securely connected together. The side sections, A', of the carrying-frame are made hollow and substantially

square in form, and the vertical parallel pieces of the said side sections are each provided with two or more transverse openings, *a*, for a purpose hereinafter described. Each of the said side sections, A', of the main carrying-frame is further provided with parallel horizontal ears or lugs *a'*, between which are arranged horizontal ears *b*, which are secured to or formed with vertical plates B⁵, which are connected with the carrying-wheels B of the cultivator. These ears *a'* and *b* are pivotally connected by a vertical pivot bolt or shaft, *a*², which passes through aligned openings in the ears; and in the plates B' of the carrying or supporting wheels B are rigidly affixed or secured short horizontal axles B', on which are journaled the said supporting-wheels B, as will be readily understood. Each of the said vertical plates are thus disposed at the sides of the machine, and to the plates are secured in any suitable or rigid manner the draft tongues or bars B², and to the outer ends of these bars are connected whiffletrees B³, to which a draft-animal is to be connected or hitched in the ordinary manner.

It will be observed that the vertical bearing-plates B⁵, in which the stub-axles of the supporting-wheels are journaled, are pivotally connected to the main carrying-frame A, and that by this means the wheels are capable of adjustment at an angle to each other and the line of draft, or parallel.

The trailing plows D of the cultivator are connected to the side sections, A', of the carrying-frame by the intermediate couplings, E, and the said plows are attached to the side sections at points within the line of draft of the tongues B², as shown in Fig. 1 of the drawings.

Each of the plows, of which there are preferably two, is provided with a straight beam, D', and two or more depending cultivator-teeth, D², which are adjustably secured to the beam, so that they can be moved laterally or to one side thereof, and also to change the angle at which they lie to the ground. I preferably employ three (3) of these depending teeth, one of which is arranged on the side of the beam nearest to the fellow plow and the other two on the opposite side of the beam farthest away from the fellow plow. The

teeth are arranged out of line with and one in rear of the other, and they are each provided with a vertical shank, d , which has a transverse opening, d' , at its upper end, the opening being square in form. A square shaft, d^2 , is passed through the square opening in the upper end of the shank of the teeth, one of these shafts being provided for each of the teeth; and each shank is further provided with a binding-screw, d^3 , that works in a suitable threaded opening in the shank and bears upon the upper face of the shaft to clamp the tooth thereto. The shank and its tooth can be moved longitudinally of the shaft by merely loosening the binding-screw, and thus the tooth can be adjusted laterally of the plow-beam. The shank and its tooth are very securely and rigidly held upon the shaft provided therefor by means of the binding-screw, and the ends of the shaft are reduced to provide the trunnions or lugs d^5 . The inner trunnion of each shaft is passed through a suitable opening in the vertical side of the plow-beam, and it is further threaded and provided with a nut, d^4 , and the outer trunnion is also exteriorly threaded and passed through an opening in a strap or brace, D^5 . The threaded trunnion or lug on the outer end of the shaft extends through the opening provided therefor in the strap, and the forward ends of the latter bear against the plow-beam and are secured thereto by bolts or the like. The straps or braces for the second and third depending teeth of the cultivator-plows are connected together at one end, and the rear end of the strap for the third tooth terminates at the point where the outer end of the third shaft is connected thereto, as shown in Fig. 4.

The rear extremity of the plow-beam has a handle, D^3 , connected thereto by the inner end of the third shaft for the depending teeth, and the forward extremity of the said handle is provided with a lug, f , formed therewith, which has a segmental slot, f' , through which the inner end of the shaft for the second depending tooth is passed. The angle of the handle to the plow-beam can be varied by merely loosening the nut which holds the inner end of the second shaft for the tooth, and then moving the handle to the desired position, after which the nut is again tightened to hold the handle immovably on the plow-beam, as will be very readily understood.

The coupling E, intermediate of the carrying-frame and plow-beam, is made or formed of a single piece of metal. The front portion of the coupling is bifurcated to provide two arms, e , and each of these arms is provided with curved or outwardly-bent portions e' , between which passes a tubular sleeve, E' . A bolt, e^2 , passes through aligned openings in the free ends of the arms e of the coupling E to more securely hold and retain the sleeve E' therein, and through this sleeve passes a bolt or shaft, E^2 , which is fitted in the transverse apertures a , formed in the vertical sides of the side sections, A' , of the carrying-frame. The sleeve

E' of the coupling is snugly fitted between the vertical sides of the side sections, A' , so that the longitudinal opening in the sleeve aligns with the transverse openings a in the vertical sides of the side sections, A' . The shaft or pin is detachably fitted in the side section of the frame A, and the sleeve E' of the coupling is adjustably connected thereto, the sleeve being adjustable vertically in the side section, A' , since there are more than one opening, a , as shown. It will be seen that the sleeve provides an extended bearing-surface on which the plow-beam is clamped, but that the latter is still free to move vertically by the turning of the sleeve on the bolt, in order to accommodate itself to unevenness of the ground, and to permit the same to be elevated above and out of contact therewith, in order to suspend the plow out of operative position. The rear end of the coupling E is provided with similar arms, e^3 , through which are passed a pin or shaft, e^4 , and on this shaft or pin is pivoted the front end of the plow-beam D' of one of the trailing plows D.

The trailing plow is free to swing laterally on the bolt e^4 of the coupling, and vertically on the shaft E^2 , that connects the coupling to the side section of the carrying-frame.

G designates bracket-plates which are rigidly affixed to the arched connecting portion A^2 of the carrying-frame, and these bracket-plates are arranged parallel with each other, and on substantially the same horizontal plane. The bracket-plates are extended rearwardly beyond the arched connecting-section of the main frame, and in the extended ends they are provided with transverse openings g g' .

H designates suspending-arms which are arranged in horizontal positions on the arched portions of the carrying-frame. The front end of each of these suspending-arms is connected to the rear extended end of one of the bracket-plates G by means of a bolt which passes through a suitable opening in the arm and the opening g of the bracket-plate. The front end of the suspending-arm is provided with a series of transverse openings, h , one of which is adapted to align with the opening g' in the bracket-plate, and through the aligned openings g' h passes a removable pin, H' , which is connected with a hooked arm on a washer, i , of the bolt i' , by an intermediate chain, as shown. It will be seen that the suspending-arm can be lengthened or shortened at will by merely removing the bolt and pin and then extending or shortening the arm, after which it can be again rigidly held in place and connected with the bracket-plate by the bolt and pin.

I designates depending standards which are affixed to the vertical bearing-plates of the axles, and the lower ends of these standards are adapted to rest upon and slide over the surface of the ground when the trailing plows are elevated and suspended from the rear end of the suspending-arms H, as shown in Fig. 2. The rear end of the vertical bearing-plate

of each axle of the supporting-wheel is extended in rear of the frame A, and provided with a vertically-disposed series of apertures, *j*, and through one of these apertures *j* of each vertical bearing-plate is passed a bolt, J, which also passes through a longitudinal slot, *j'*, that is formed in the upper end of the depending standard I, the inner end of the bolt being provided with a thumb-nut, *j''*, as shown. The angle or position of the standard with relation to the carrying-frame can be varied by merely changing the bolt from one aperture to the other of the vertical bearing plate; and the standard can be lengthened or shortened at will by moving it up or down to cause the bolt to ride in the longitudinal slot thereof.

This being the construction of my improved cultivator, the operation thereof is as follows: The draft-animals are hitched to the whiffletrees of the tongues B² and the machine is thus drawn across the field. The trailing plows are lowered so that the teeth come in contact with the ground, and the plows are drawn along with the carrying-frame, and in rear of the latter. The handles of the plows are grasped by the operator, and the plows are thus guided to act upon the hills. The plows can be readily shifted laterally of the hills or plants by reason of the horizontal swinging movement on the vertical bolt *e'*, and they readily accommodate themselves to any unevenness in the surface of the ground, as they are capable of vertical movement on the bolt E².

When it is desired to move the cultivator from one field to another, the trailing plows are elevated by hand until the front bracket or strap thereof takes over the rear end of the suspending-arms H, thus elevating the teeth out of contact with the ground; and the weight of the trailing plows when they are thus suspended causes the carrying-frame to tilt rearwardly and downwardly slightly until the lower extremities of the vertical standards I rest upon the ground. These standards thus serve to limit the tilting movement of the carrying-frame and to relieve the latter of the entire weight and strain of the trailing plows when the latter are suspended therefrom.

My improved cultivator is simple, strong, and durable in construction, effective and reliable in operation, easily and readily operated, and cheap.

Slight changes in the form and proportion of parts can be made without departing from the

spirit or sacrificing the advantages of my invention.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a cultivator, the combination of the frame having the side sections provided with vertical series of holes, and the couplings carrying sleeves fitted between the vertical sides of the side sections and pivotally connected thereto, so as to be vertically adjustable therein, by a transverse pin passing through a pair of said holes in the couplings and having an independent horizontal movement thereon, substantially as described.

2. In a cultivator, the combination of the carrying-frame having the arched central portion, the bracket-plates affixed to the frame, the suspending-arms adjustably connected to the bracket-plates and capable of being lengthened or shortened at will, and the trailing plows connected to the carrying-frame and capable of vertical movement to suspend the same from the arms, substantially as described.

3. In a cultivator, the combination of a carrying-frame, draft-plates B², provided with a vertical series of transverse holes, *j*, the trailing plows connected to the frame-sections, mechanism supported by the frame for suspending the plows therefrom, and the slotted standards I, having the thumb-bolt J passing through one of said holes for adjustably connecting the standard to the frame, substantially as described.

4. In a cultivator, the combination, with the carrying-frame, of trailing plows pivotally attached thereto, each of said plows comprising a straight rearwardly-extending beam, D', provided with three transverse holes, metallic straps D⁵, bolted at their forward ends to said beam and provided with transverse holes opposite the holes in the beam, shafts *d''*, having reduced screw-threaded trunnions *d'* fitting in said holes, nuts on said trunnions for securing said shafts in position, and depending teeth D², having holes in their upper ends through which said shafts pass, substantially as described.

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

ALEXANDER ROBERTSON.

Witnesses:

R. H. GIBSON,
N. B. CROWELL.