(No Model.)

4 Sheets—Sheet 1.

B. C. BRADLEY.

TONGUELESS CULTIVATOR.

No. 274,555. Patented Mar. 27, 1883.

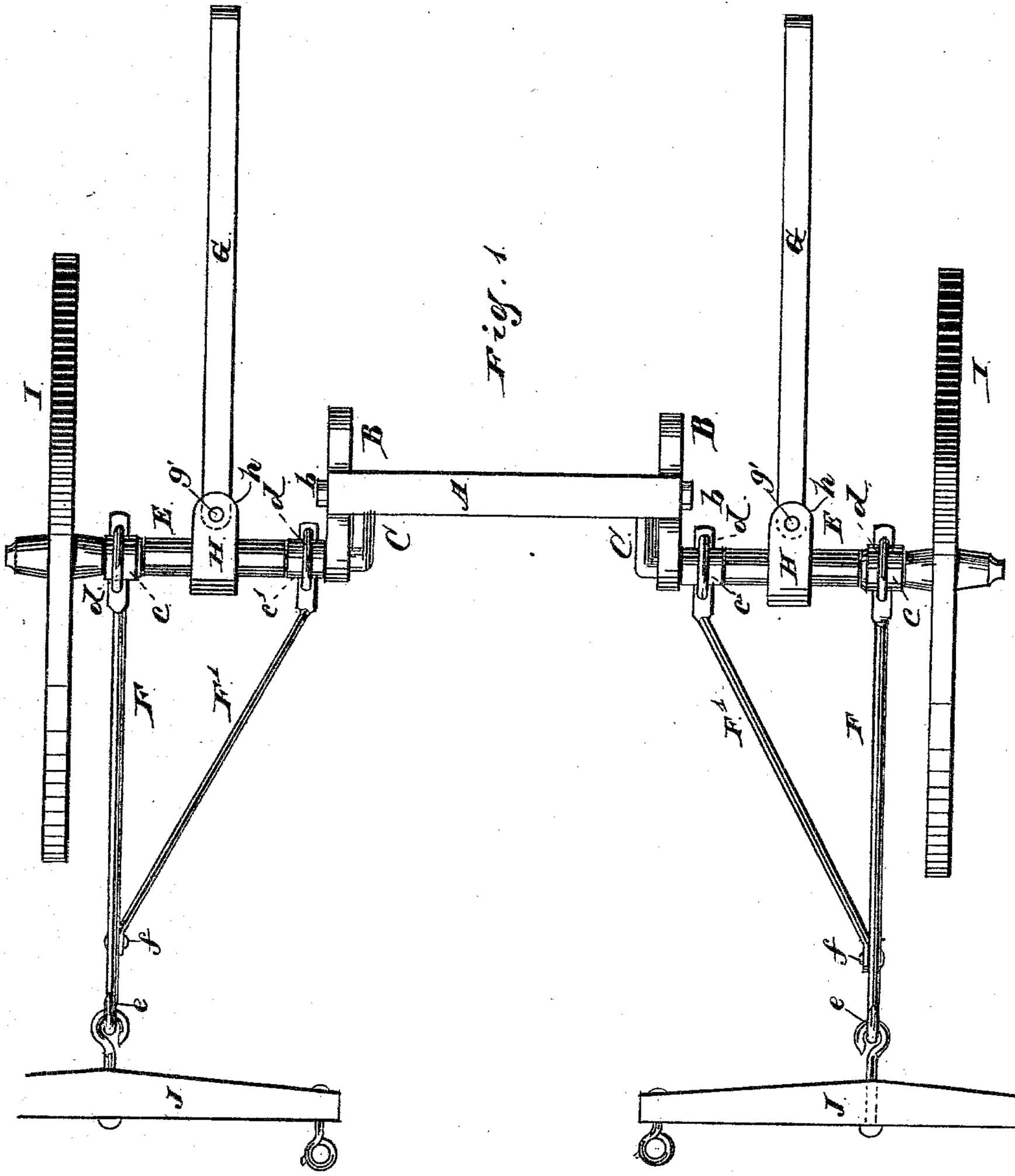

Fig. 1.

Witnesses:
A. P. Adams.
B. A. Pruce.

Inventor:
Byron C. Bradley
By West & Bond.
His Attys.

(No Model.) 4 Sheets—Sheet 2.

B. C. BRADLEY.

TONGUELESS CULTIVATOR.

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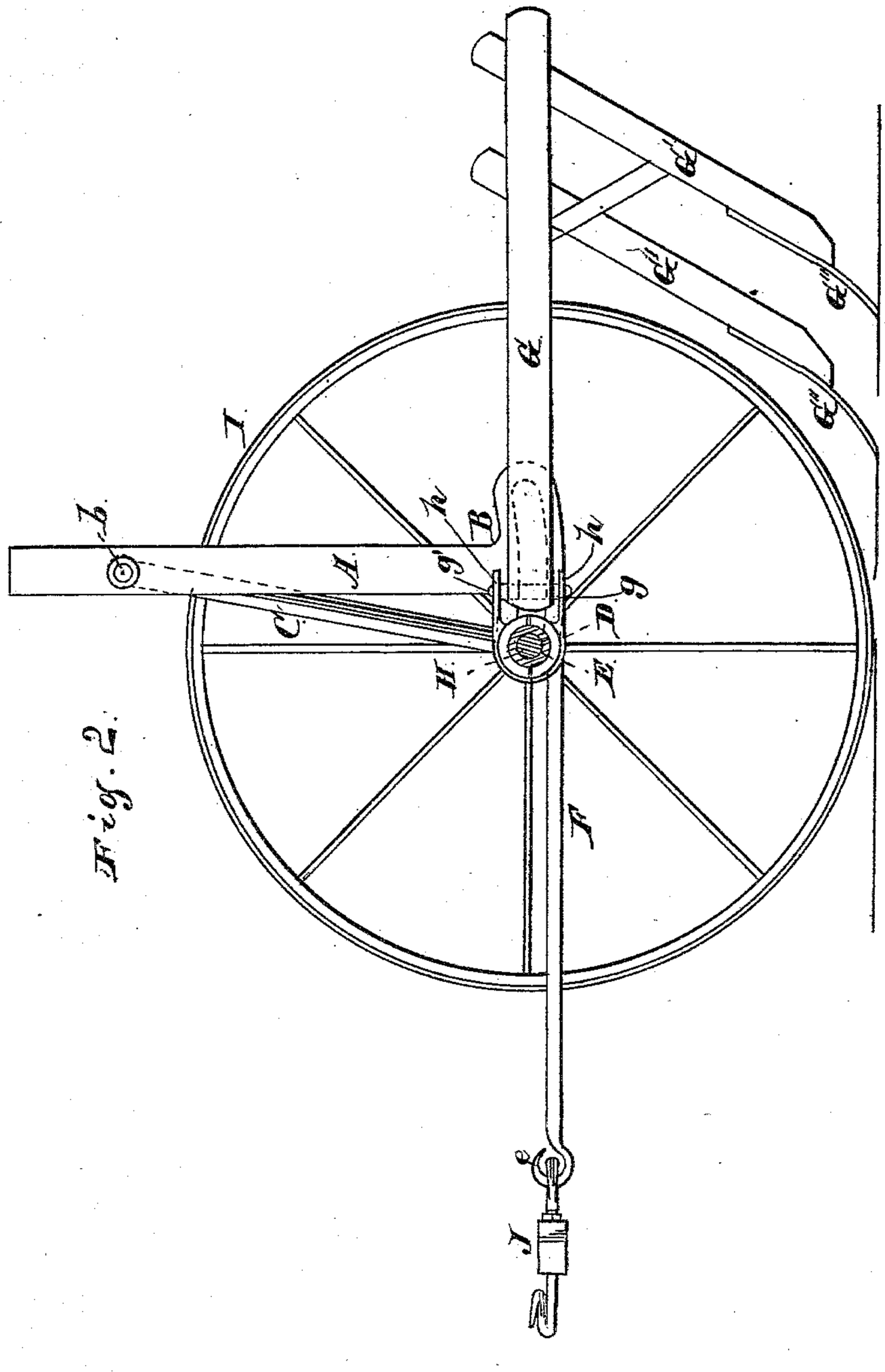

Fig. 2.

Witnesses:
A. F. Adams.
B. A. Price

Inventor:
Byron C. Bradley.
By Wright Brown & Quinby
His Attys

(No Model.) 4 Sheets—Sheet 3.

B. C. BRADLEY.

TONGUELESS CULTIVATOR.

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Fig. 4.

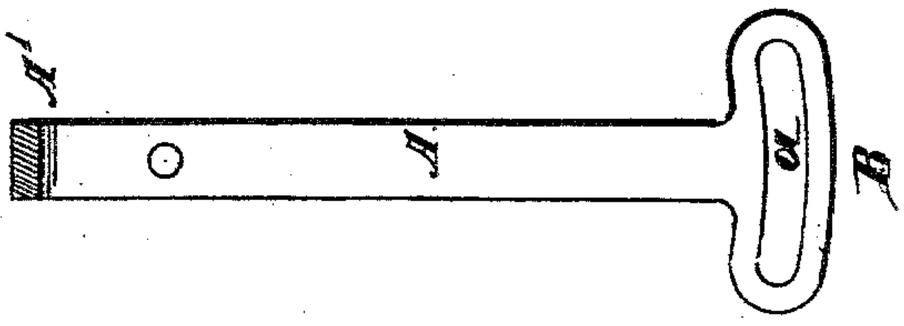
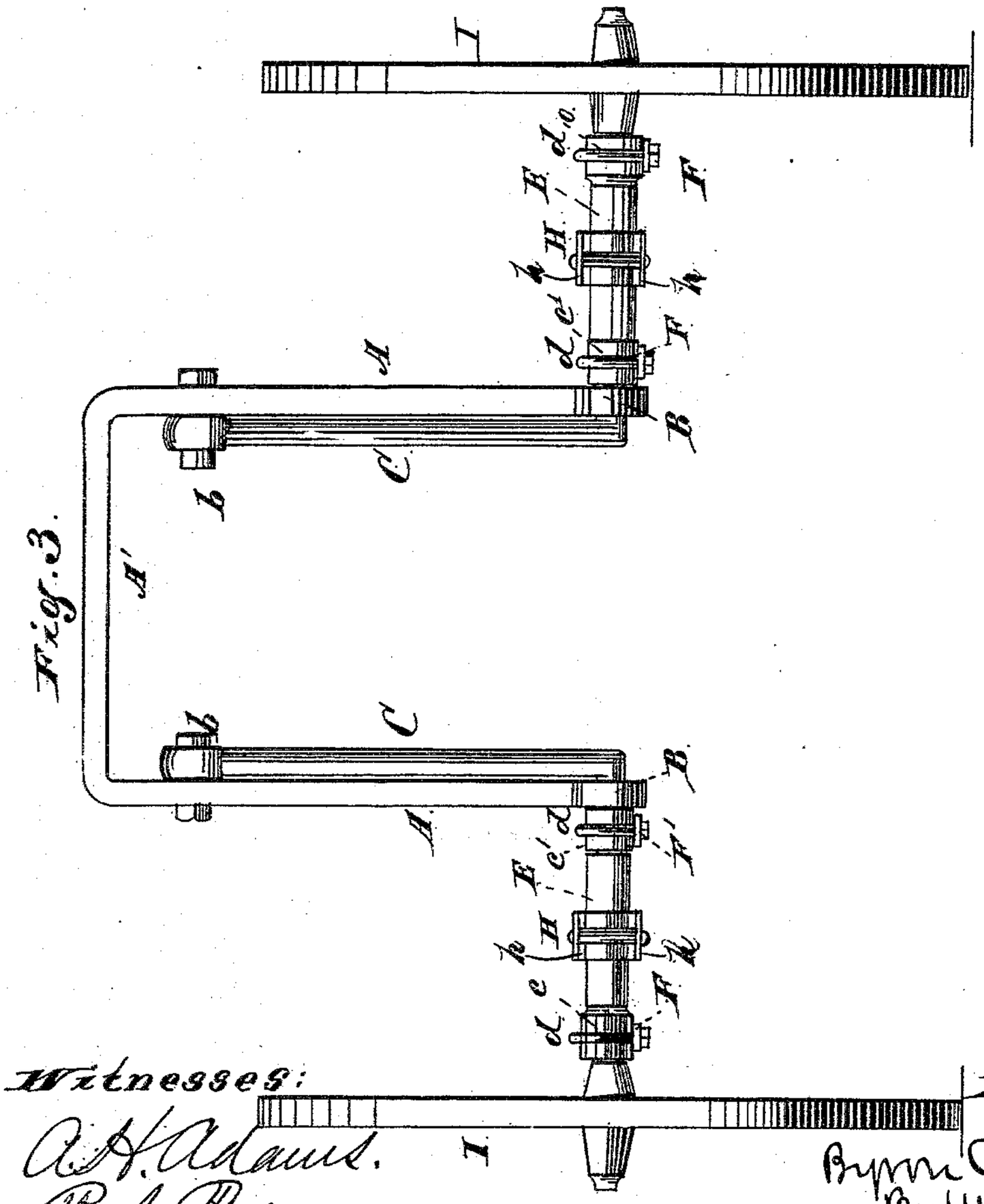


Fig. 3.



Witnesses:

A. H. Adams.

B. A. Price.

Inventor:

By his Atty's.

(No Model.) 4 Sheets—Sheet 4.

B. C. BRADLEY.

TONGUELESS CULTIVATOR.

No. 274,555. Patented Mar. 27, 1883.

Fig. 6.

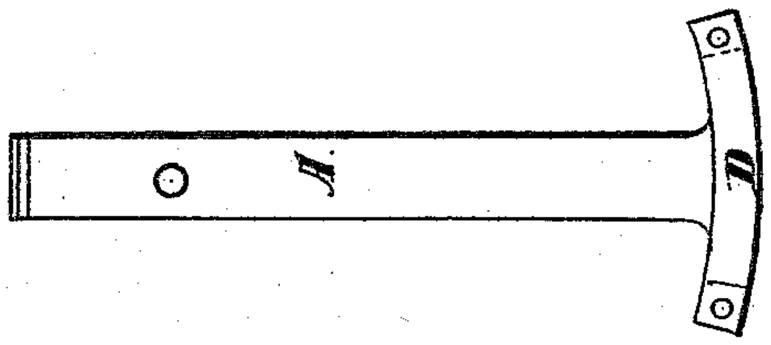


Fig. 5.

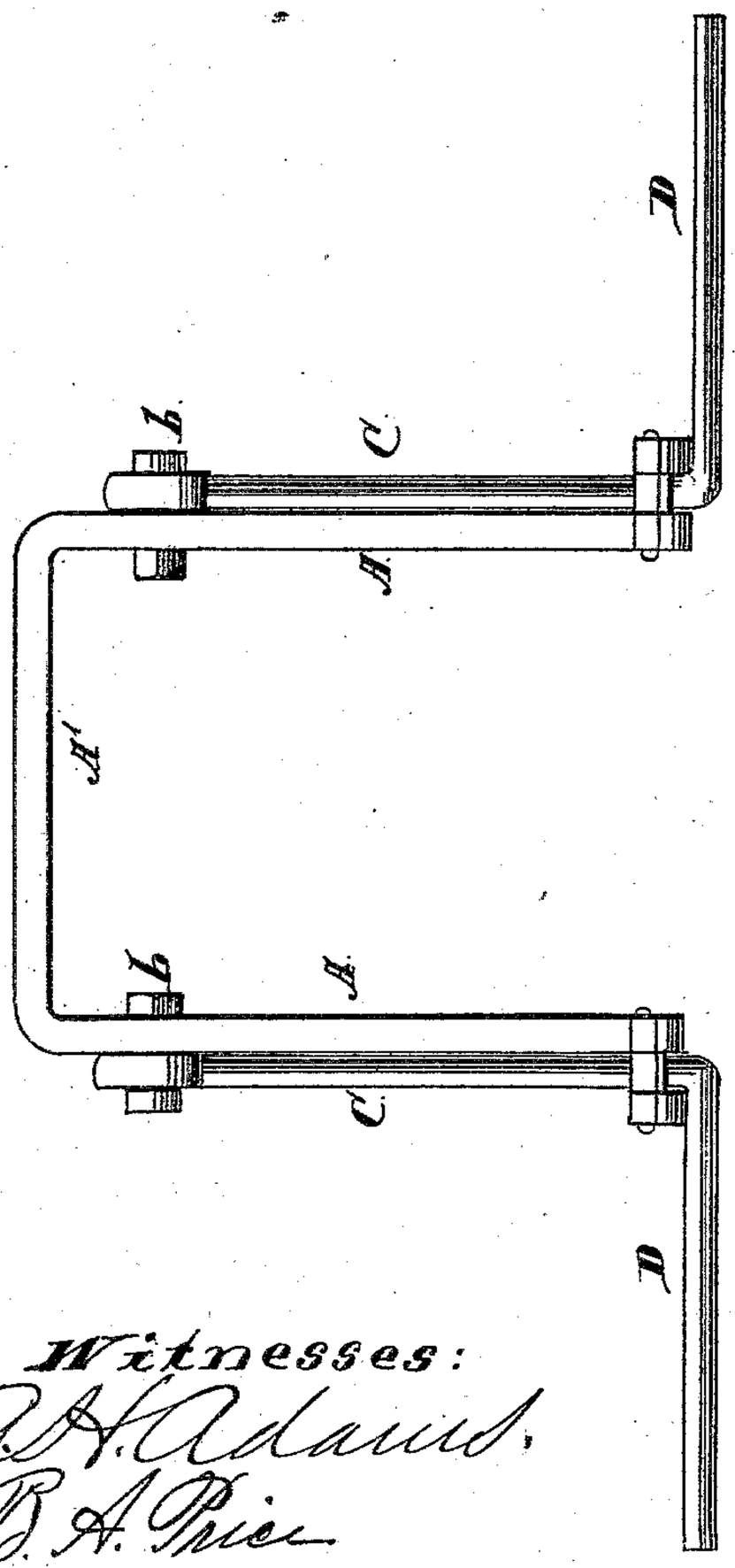
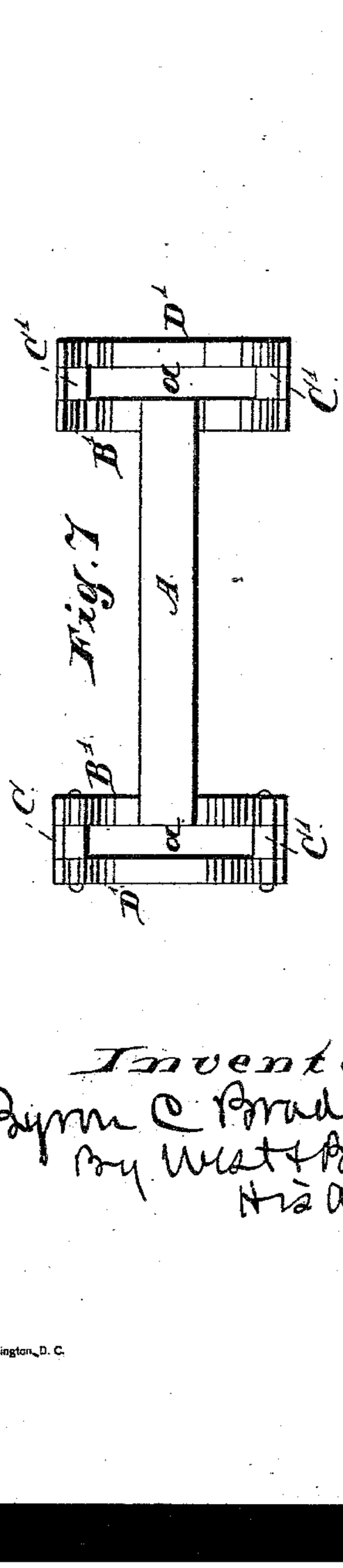


Fig. 7.



Witnesses:
A. H. Adams.
B. A. Price

Inventor:
Byron C. Bradley.
By West & Bond.
His Attys.

UNITED STATES PATENT OFFICE.

BYRON C. BRADLEY, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE FURST & BRADLEY MANUFACTURING COMPANY, OF SAME PLACE.

TONGUELESS CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 274,555, dated March 27, 1883.

Application filed November 27, 1882. (No model.)

To all whom it may concern:

Be it known that I, BYRON C. BRADLEY, residing at Chicago, in the county of Cook and State of Illinois, and a citizen of the United States, have invented new and useful Improvements in Tongueless Cultivators, of which the following is a full description, reference being had to the accompanying drawings, in which—

Figure 1 is a top or plan view; Fig. 2, a side elevation of the axle with the wheel-spindle and the sleeve-coupling of the plow-beam in section; Fig. 3, a rear elevation; Fig. 4, a detail showing the vertical portion of the arch or frame; Fig. 5, a rear elevation, showing a modification in the attachment of the wheel-spindles; Fig. 6, a detail, being a side view of the arch or frame; Fig. 7, a top or plan view of the arch or frame shown in Fig. 5.

The object of this invention is to provide novel and efficient means whereby I secure a forward and back movement of the wheel-spindles and wheels independent of the arch or frame, and also a forward or back movement of either wheel-spindle and wheel independent of the other wheel-spindle and wheel and of the frame, and at the same time have the arch or frame supported in its vertical position irrespective of such independent movements of either the axle or the wheel-spindle and wheels, allowing one wheel to travel in advance of the other and of the frame, as required by the draft.

The object of my invention I accomplish by the devices illustrated in the drawings, and hereinafter described and claimed.

In the drawings, A represents the vertical side or end pieces of an arch or frame, and A′ the horizontal portion. This arch or frame may be made of a single piece, or of independent pieces suitably connected together.

B is a loop or head, having a slot, *a*, longitudinally curved. This loop or head B may be formed on each side or vertical piece, A, at the lower end; or it may be an independent piece suitably attached to each vertical or side piece, and the length of slot *a* is to be sufficient to allow the required movement of the wheels or the axle.

C D are the axles, C being the vertical portion, and D the horizontal or spindle portion, which receives the wheel, one being used on each side of the arch or frame. The vertical portion C of each axle is pivoted at or near its upper end by a suitable bolt or pin, *b*, to the vertical portion A of the axle or frame at the proper point for the horizontal portion B to pass through the slot *a* and be free to swing forward and back therein. The spindle extends beyond the head or loop B a sufficient distance for the reception of a pipe-box, to which the plow-beams are connected, and for the attachment of the wheels.

E is the pipe-box, one for each spindle D, and each having a central longitudinal opening for the passage of the spindle, and each box of the required length to furnish a bearing on the spindle and for the attachment of the plow-beam. As shown, each pipe-box is located between a sand-box, *c*, for the hub of the wheel and a guide or pressure collar, *c′*, the sand-box *c* and collar *c′* being secured to the spindle in any suitable manner so as to be stationary or immovable.

F F′ are the draft-bars, one for each side of the machine. The rear ends of each draft-bar F F′ pass, respectively, beneath the sand-box *c* and the collar *c′*, and are secured by passing clips *d*, one over the sand-box *c* and one over the collar *c′*, the ends of each cup passing through suitable holes in the respective ends of the draft-bar, and the attachment being completed by suitable nuts on the ends which pass through the ends of the draft-bar. The part F of each draw-bar, at its forward end, is provided with a hook or eye, *e*, for the attachment of a whiffletree or other draft device, and, as shown, the other part, F′, of the draft-bar is attached at its forward end to the part F by a bolt, *f*.

G are the plow-beams, having standards G′ attached thereto, and each standard having a shovel or plow, D″, attached to its lower end.

H is a box or bearing encircling the pipe-box E, a box or bearing, H, being provided for each pipe-box. This box or bearing H may be made in two sections or halves, connected by suitable bolts or in other suitable manner, by which it can be readily attached to or detached from the pipe-box, and be adjusted longitudinally thereon to change the distance between the two plow-beams for different

widths of rows. Each box or bearing H has rearwardly-projecting ears or leaves *h*, between which is located a head, *g*, attached to the forward end of the plow-beams, which head has a vertical opening for the passage of a bolt, *g'*, by means of which a pivoted connection is made to the box H, by which the plow-beam can be swung horizontally, a vertical movement of the plow-beam being permitted by the pipe box or bearing E turning on the spindle.

I are the wheels, one of which is attached to each spindle, D, and is held in position by a pin or nut in the usual manner.

J are whiffletrees, one attached to each draw-bar F F' by being hooked to the eye or hook *e*.

The pipe-box is loosely held in between the sand-box *c* and the collar *c'*, and the sand-box *c*, being stationary on the spindle, prevents end-thrust of the wheel, while the collar *c'* furnishes a means for maintaining the vertical portion C of the axle in place, so that it is free to swing on its pivot *b*.

The parts are put together by passing the spindle D through the opening *a* of its head or loop B, and pivoting the vertical portion C by its bolt or pin to the arch or frame, slipping the collar *c'* to place and securing it, then slipping the pipe-box with its draw-bar F onto the spindle D, then slipping the sand-box *c* to place and securing it, and then placing the wheel on this spindle and securing it.

In use each spindle is free to move forward or back in its slot to the extent of the limit of the slot, and such movements of the spindles, either or both, will not affect the arch or frame until the limit of the movement is reached, by which arrangement it will be seen that one wheel is free to travel in advance or back of the other and of the frame without affecting the arch or frame or the other wheel until the end of the slot is reached, when the arch or frame comes into play and forms an equalizer, by which the entire draft is not thrown on one side, but is properly maintained. The result of this construction and arrangement is, that one wheel can travel forward or back of the other and of the frame independently in cases of unequal draft until the limit of the slot is reached, when the arch or frame comes into play and forms an equalizer. At the same time the arch or frame is maintained in its vertical position to furnish the necessary connection between the wheel-spindles, while the spindles themselves can move independent of each other; and the construction also provides an easy turning of the machine, as one wheel can advance, while the other can recede.

Instead of using a collar, *c'*, at the inner end of the spindle, a washer or ring could be used to prevent end-play of the axle and arch or frame, and some other form of sand-box could be used than that shown. The pipe-box E could be dispensed with, and the coupling of the forward end of the plow-beam to its spindle be made direct by means of the half boxes or bearings H, or other suitable connection, in which case the lateral adjustment of the plow-beam is made on the spindle. The same result can be attained as shown in Figs. 5, 6, and 7, in which form of construction the vertical portion C, forming the axle, is located outside of the vertical portion A of the arch or frame upon each side. Each lower end of the arch or frame has a plate or head, B', extending out upon each side, and an opening corresponding to the curved slot *a* of the other form of construction is formed by a piece, D', corresponding in shape to the plate B', and interposed pieces C' at each end of the plates B' D', as shown in Fig. 7. The portion C of the axle passes through the opening *a*, formed by these plates B' D', and the spindle portion D passes out from the under side of the plate C', as shown in Fig. 5, and the curvature of the under side of the plate C' forms a guide for the swing of the axle, the same as the curved edges of the slot or passage *a* in the other form of construction. The opening *a*, formed by the plates B' D' and end pieces, C', allows the axle and spindle to swing forward and back in the arc of a circle in the same manner as described for the curved slot *a*, and the result is the same as that described. The plate C' might be located on the inside of the arch or frame, forming the opening or passage *a* on that side, instead of the outside, as shown in Fig. 7, in which case the vertical portion C of the axle would pass upon the inside of the arch or frame, and the horizontal or spindle portion D would pass out beneath the end of the arch, and the plate B' would form the guide therefor in the swinging or forward and back movement.

I am aware that a cultivator has been provided with an axle composed of two crank-shaped sections, the lower horizontal portions carrying the wheels, while their upper horizontal portions rotate in a sleeve having at each end a guide for limiting the swinging movements of the axles in the sleeve. Such, however, does not constitute my invention, and is not claimed by me.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a stationary arch or frame, A A', of loops or heads B, arranged at the lower ends of the vertical or side portions of the arch or frame, and provided with passages or slots *a* and independent axles C D, each having its vertical portion pivoted by a bolt or pin at its upper end, said axles passing through the passages or slots at or adjacent to the inner ends of their horizontal portions D, which carry the wheels, substantially as described.

2. A head or loop, B, having a longitudinal passage or slot, *a*, in combination with an axle-spindle C D and an arch or frame, A A', to the vertical portion A of which the axle C is pivoted, substantially as and for the purposes specified.

3. A head or loop, B, having a longitudinal

passage or slot, *a*, axle-spindle C D, and arch or frame A A′, to the vertical portion A of which the part C is pivoted, in combination with a pipe-box located on the spindle and a draft-bar attached to the spindle, substantially as and for the purposes specified.

4. A head or loop having a longitudinal passage or slot, *a*, axle-spindle C D, and arch or frame A A′, to the vertical portion A of which the part C is pivoted, in combination with a pipe-box located on the spindle, and draft-bar attached to the spindle, and a wheel, substantially as and for the purposes specified.

BYRON C. BRADLEY.

Witnesses:
ALBERT H. ADAMS,
EDGAR T. BOND.