

(No Model.)

2 Sheets—Sheet 1.

W. P. BETTENDORF.
CULTIVATOR.

No. 466,216.

Patented Dec. 29, 1891.

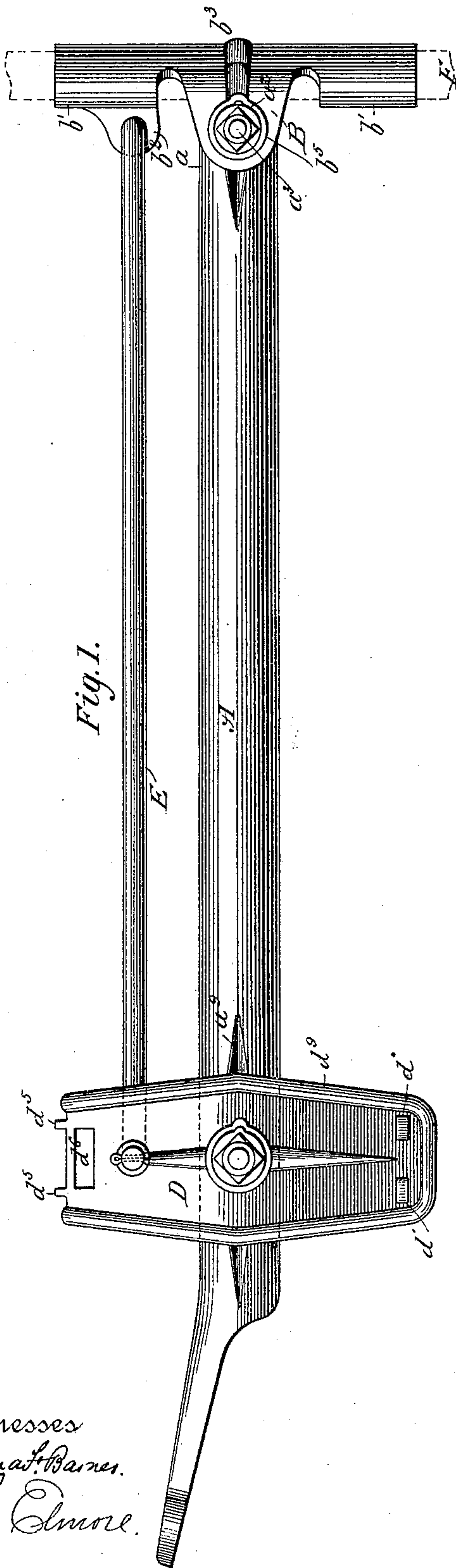


Fig. 1.

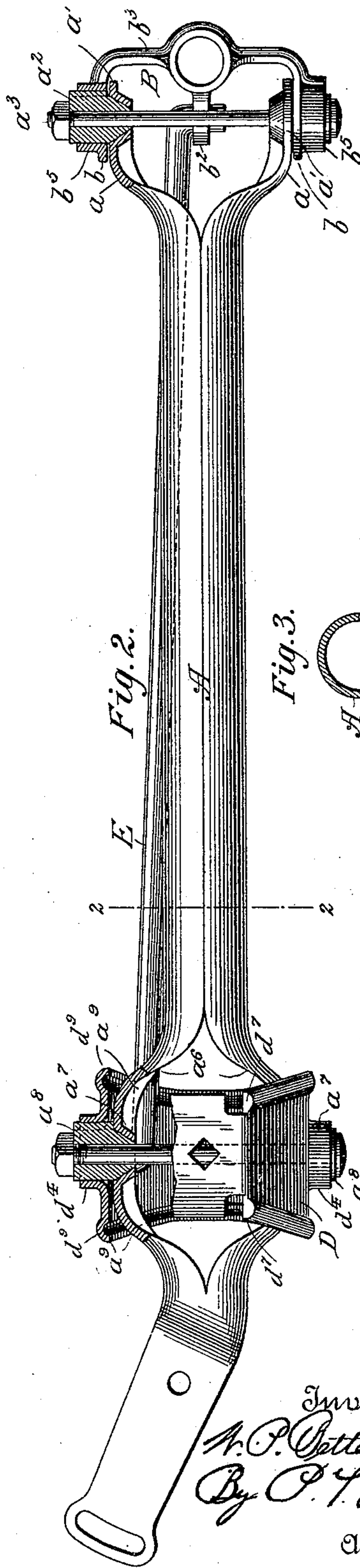
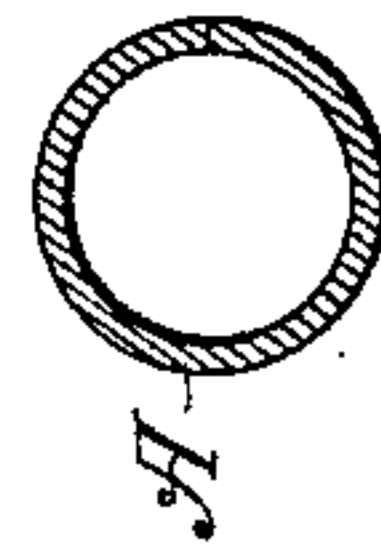


Fig. 2.

Fig. 3.



Section on line 2-2.

Witnesses
Raymond A. Barnes.
J. S. Elmore.

Inventor
W. P. Bettendorf
By P. T. Dodge
Attorney

(No Model.)

2 Sheets—Sheet 2.

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Fig. 4.

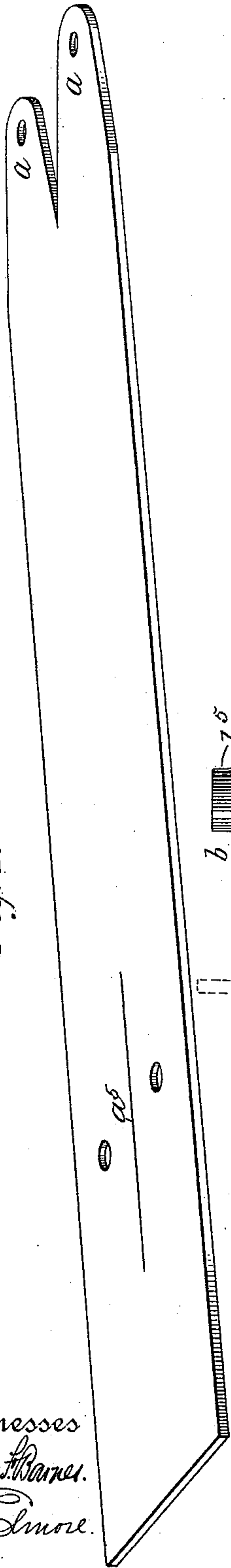


Fig. 7.

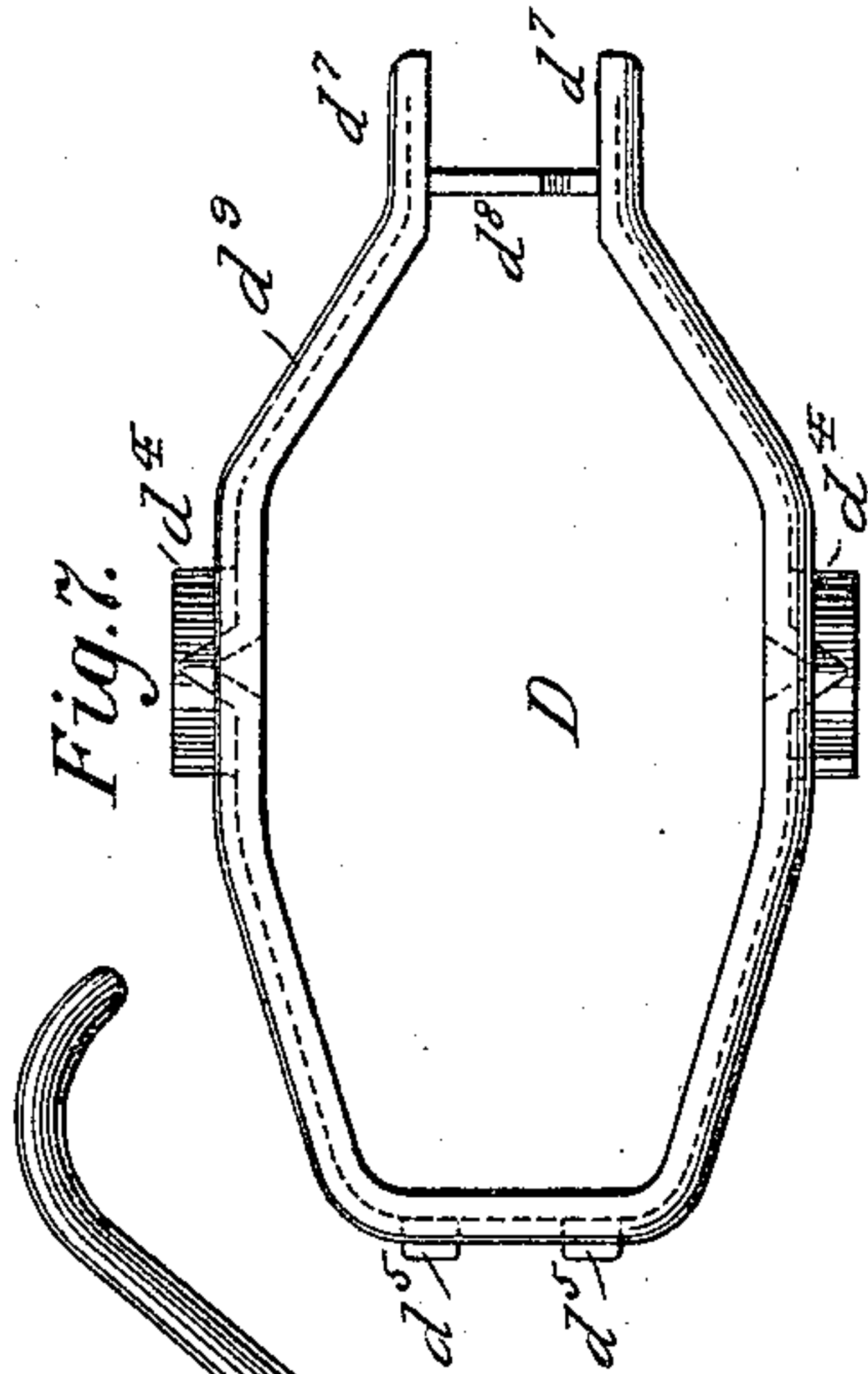


Fig. 6.

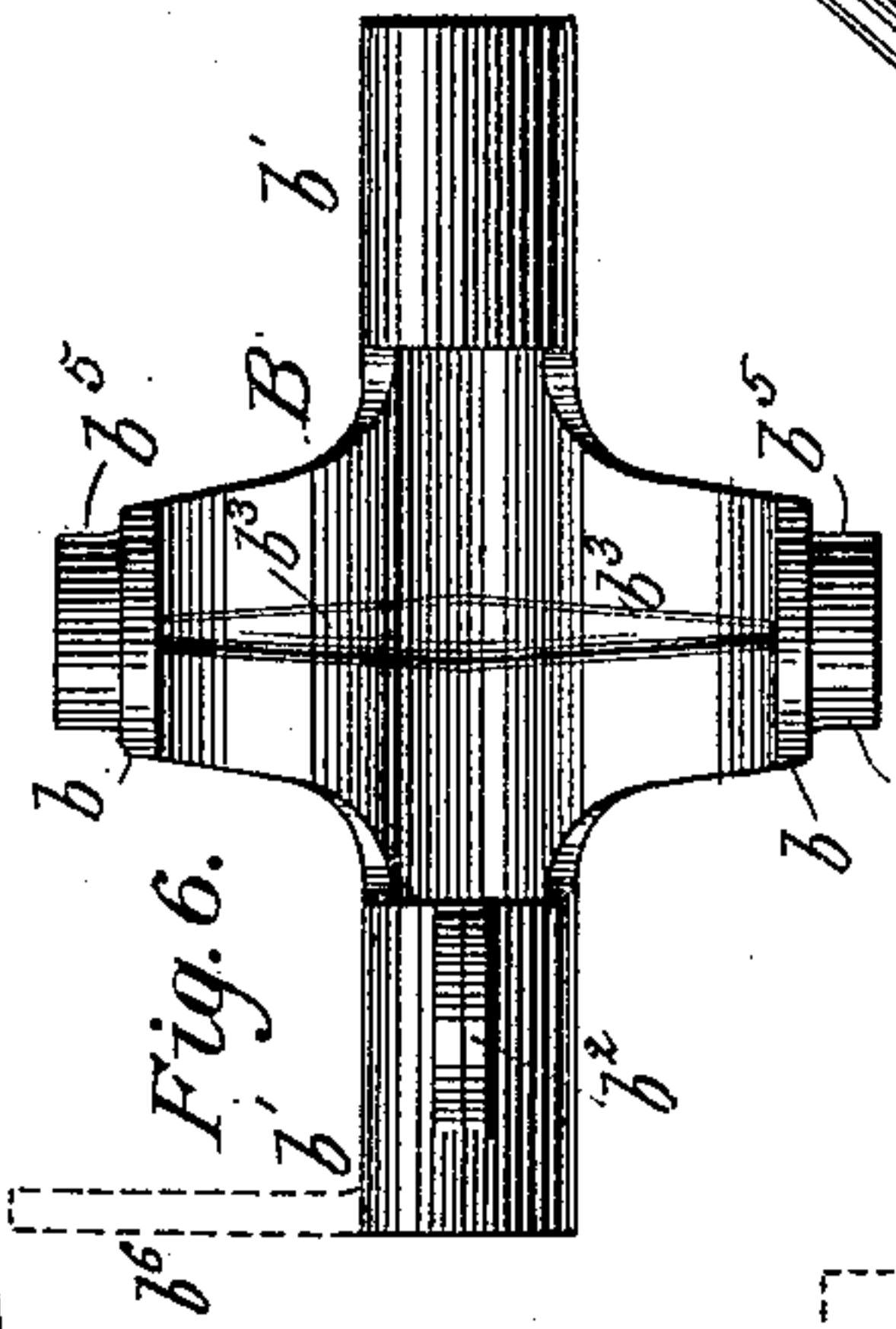


Fig. 9.

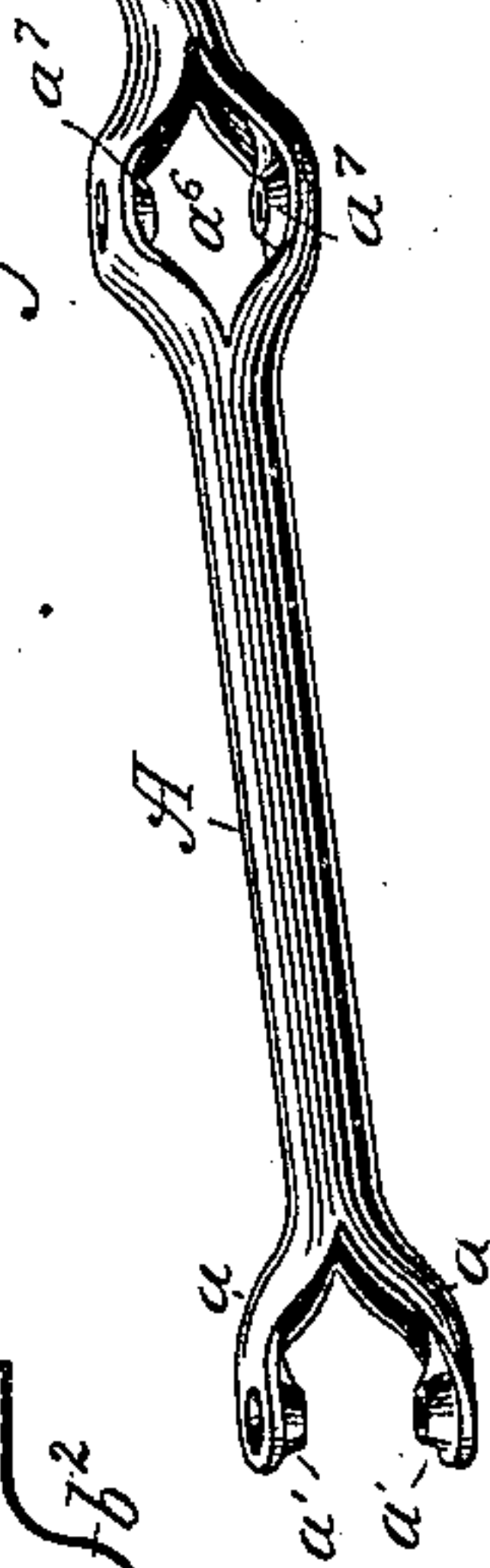


Fig. 8.

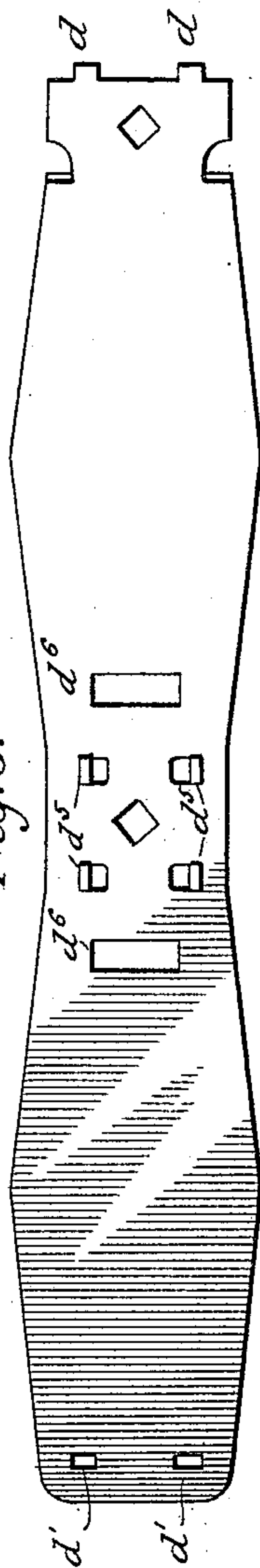
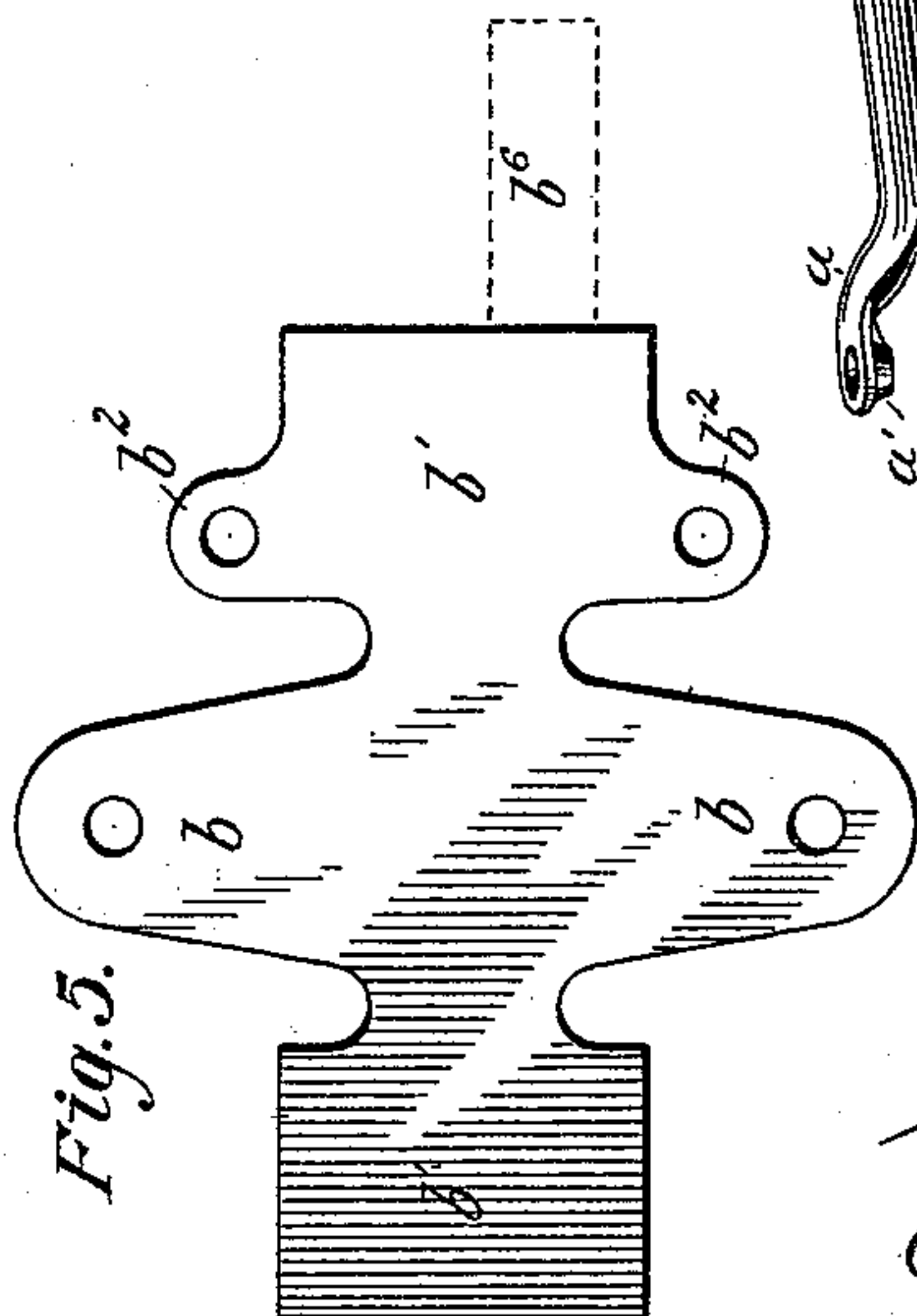


Fig. 5.



Witnesses
Raymond Barnes.
J. S. Elmore.

Inventor
W. P. Bettendorf
By P. T. Hodge
Attorney

UNITED STATES PATENT OFFICE.

WILLIAM P. BETTENDORF, OF DAVENPORT, IOWA.

CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 466,216, dated December 29, 1891.

Application filed August 5, 1891. Serial No. 401,756. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM P. BETTENDORF, of Davenport, county of Scott, and State of Iowa, have invented a new and useful Improvement in Cultivators, of which the following is a specification.

This invention has reference to a peculiar construction of the laterally and vertically swinging beams which are used in cultivators for the purpose of carrying at their rear ends the yokes or cross-bars to which the shovels are attached.

The invention has in view the construction of the beam, the draft-head or coupling, and the cross-head or saddle from sheet metal, so that they may be produced cheaply and without the use of massive machinery in forms such as to well resist the strains encountered in practice.

In the accompanying drawings, Figure 1 is a top plan view of a cultivator-beam and connections in accordance with my invention. Fig. 2 is a side elevation of the same, with portions shown in vertical section. Fig. 3 is a cross-section on the line 2 2 of Figs. 1 and 2. Fig. 4 is a perspective view of the blank from which the beam is formed. Fig. 5 is a plan view of the blank from which the draft-head or coupling is formed. Fig. 6 is a front elevation of the coupling. Fig. 7 is a front elevation of the yoke or saddle. Fig. 8 is a view of the blank from which the yoke is formed. Fig. 9 is a perspective view of a modification.

Referring to the drawings, A represents a beam; B, the draft-head or coupling, to which it is connected by a vertical pivot-pin a^3 ; D, the transverse cross-head or saddle pivotally connected to the rear end of the beam to carry the shovel-standards, and E the so-called "parallel bar" lying alongside of the beam and connecting the saddle with the coupling in order to keep the cross-head parallel with the front axle and prevent the shovels from changing their angle as they are moved laterally by the beam, as in other machines.

I construct my beam from a single sheet or plate of metal cut to suitable size and shape and bent into tubular form in cross-section. I preferably adopt the circular form, as shown in Fig. 3; but the form may be elliptical or angular, if preferred. At its forward end I form the blank with the two perforated arms

or extensions a . Before or after the blank is bent into tubular form these arms, which lie one over the other, are bent apart vertically, as shown in Fig. 2, so that the beam has at its front end a forked shape, in order to adapt it the better for connection with the draft-head. By means of dies or pressure devices the front arms a are shaped into conical sockets a' , having vertical perforations there-through and adapted to receive the conical pivots a^2 , seated in the coupling, and the vertical bolt a^3 , by which the centers are held to their places, as in existing machines. The form of the sockets to receive the pivots or centers may be varied at the will of the constructor, according to the shape and details of the pivot which may be employed. Near the rear end I provide the blank with a longitudinal incision a^5 , and after it is bent into tubular form, so that this incision lies on one side and the joint between the edges of the plate at the opposite side, I bend the upper and lower portions of the beam upward and downward, respectively, as shown at a^6 , Fig. 2, thus widening the beam vertically, or, in other words, giving it an increased vertical depth at this point in order to adapt it the better to receive and carry the cross-head. The portions a^6 are by suitable dies formed with upper and lower sockets a^7 to receive the pivots a^8 of the cross-head; but these sockets may be varied in form at will to suit the shape of the pivots employed. In order to give increased rigidity to the curved portions a^6 , I ordinarily form them with longitudinal ribs or corrugations a^9 . These are not, however, necessary features.

The coupling or draw-head through which the drag-bar is connected with the axle is constructed from a flat blank of the shape shown in Fig. 5, cut from sheet metal and thereafter bent into shape. As shown in Fig. 5, this blank has at the middle two oppositely-projecting perforated arms b and to the right and left of these arms the widened portions b' , one of which is provided on opposite edges with projecting perforated ears b^2 . The portions b' are each bent or curled into the form of a tube or sleeve to encircle the axle F, while the perforated arms b are bent over into position parallel with each other, forming a fork or stirrup to admit the end of the beam

between them and to receive the vertical hinge-pin a^3 , as shown in Figs. 2 and 6. The projecting ears b^2 , being closed together, as shown in Figs. 1 and 2, serve to receive and
 5 hold the forward end of the parallel rod E. In order to give the coupling increased rigidity, I prefer to form the vertical rib or corrugation b^3 thereon, as shown in Figs. 1, 2, and 6; but this is not a necessary feature.

10 In order to adapt the arms b to receive and firmly to hold the tubular pivots a^2 , by which the beam is connected to the coupling, I upset or otherwise shape the ends b in suitable dies, so as to produce enlarged sockets there-
 15 on, as shown at b^5 , these sockets having vertical holes through them for the passage of the pivot-bolt a^3 , by which the pivots or centers are kept in place. It is to be understood, however, that the shape of the sockets may
 20 be modified according to the nature of the pivotal connection.

It is generally the custom in this class of machines to provide the coupling or draft-head with an upwardly or laterally projecting
 25 arm with which to connect a spring tending to turn the coupling around the axle, and thus to assist in the elevation of the beam and shovel. When this arm is to be used, it may be formed integral with the coupling, as shown
 30 at b^6 . It will be formed in the first instance on one end of the blank (shown in Fig. 5 as in dotted lines) and subsequently bent laterally into the required position.

The cross-head or saddle D, by which the
 35 shovel-standards are to be carried in the usual manner, is formed from a single plate of metal cut to the form shown in Fig. 8, or in substantially the same form, the blank being doubled or bent back upon itself and united at the
 40 two ends, so that it forms a long yoke or saddle adapted to encircle the rear widened portion of the beam, with which it is connected midway of its length by the conical pivots a^8 , previously referred to. The connection of the
 45 two ends of the blank is best effected by providing it at one end with tongues d , which are inserted and riveted through the corresponding openings d' at the opposite end. At its middle the saddle is subjected to the ac-
 50 tion of dies or other forming devices adapted to produce therein the annular hubs or necks d^4 to receive the pivots a^8 , by which the neck is connected to the beam, as before mentioned. Vertical openings are made through the sock-
 55 ets and pivots to receive the pivot-bolt, by which the centers are held to their places. It is to be understood that the pivotal connections may be modified and that the form of the sockets or collars will be modified to cor-
 60 respond. The increased rigidity may be given to the cross-head by forming beads or flanges d^9 along its edges; but this may be omitted or modified in form.

It is customary to use at one extremity of
 65 the cross-head a shovel-standard having a ver-

tical upper end and at the opposite end of the cross-head a standard having a horizontal upper end. In order that these vertical and horizontal ends may be attached to the cross-head and each at a greater or less distance from the
 70 center, according to the distance required between the shovels, I adopt the following construction: At one end I punch lips d outward, as shown in Figs. 1, 7, and 8, in suitable position to admit of the standard being seated verti-
 75 cally between them. I also punch through the metal, at points near the middle, openings d^6 , one directly over the other, to admit of the standard being inserted therethrough. At the opposite end of the cross-head, which is
 80 to receive the horizontal standard, I project the lips d^7 outward beyond the vertical end wall d^8 , so that the standard may be confined either against the outer or the inner side of this wall, as required. 85

As shown in Fig. 9, I may form the handle integral with the beam instead of adapting the beam to receive a separate handle.

Having thus described my invention, what I claim is— 90

1. A tubular cultivator-beam having its forward end divided and spread in the form of two arms, substantially as shown.

2. A cultivator-beam consisting of a single plate of metal folded into tubular form, with
 95 its forward end divided and spread vertically and the ends of the resulting arms pressed into the form of sockets or bearings, substantially as shown.

3. The tubular beam incised and spread
 100 vertically near the rear end and having sockets or pivot-bearings formed integral with the expanded portion, substantially as shown and described.

4. The tubular cultivator-beam having the
 105 upturned flattened rear end integral therewith.

5. A tubular cultivator-beam having a portion divided or incised horizontally and separated vertically and having longitudinal ribs
 110 or corrugations formed in these separated portions to keep them in shape.

6. The cultivator-coupling consisting of a plate of metal bent into tubular form to clasp the axle and provided with the projecting
 115 arms or ears, with openings to receive a vertical pivot-pin.

7. The cultivator-coupling having the arms to receive the coupling-pin, the two sleeves to clasp the axle, and the arm to receive the
 120 parallel pin, the whole formed from a single plate, substantially such as shown, bent into shape.

8. A cultivator-yoke or cross-head consisting of a single plate of metal doubled or re-
 125 turned upon itself in substantially the form shown, one end being formed with tenons, which are projected through and riveted fast to the other end.

9. The sheet-metal cross-head consisting of 130

a single plate of metal doubled upon itself, united at the ends, and bent along the edges into strengthening-flanges *d*⁹.

5 10. The cultivator cross-head consisting of a single piece of sheet metal doubled upon itself, riveted together at the ends, and pressed up at its middle to form sockets or bearings for a vertical pivot.

In testimony whereof I hereunto set my hand, this 29th day of June, 1891, in the presence of two attesting witnesses.

WILLIAM P. BETTENDORF.

Witnesses:

THOS. B. CARSON,
EARL CLARK.