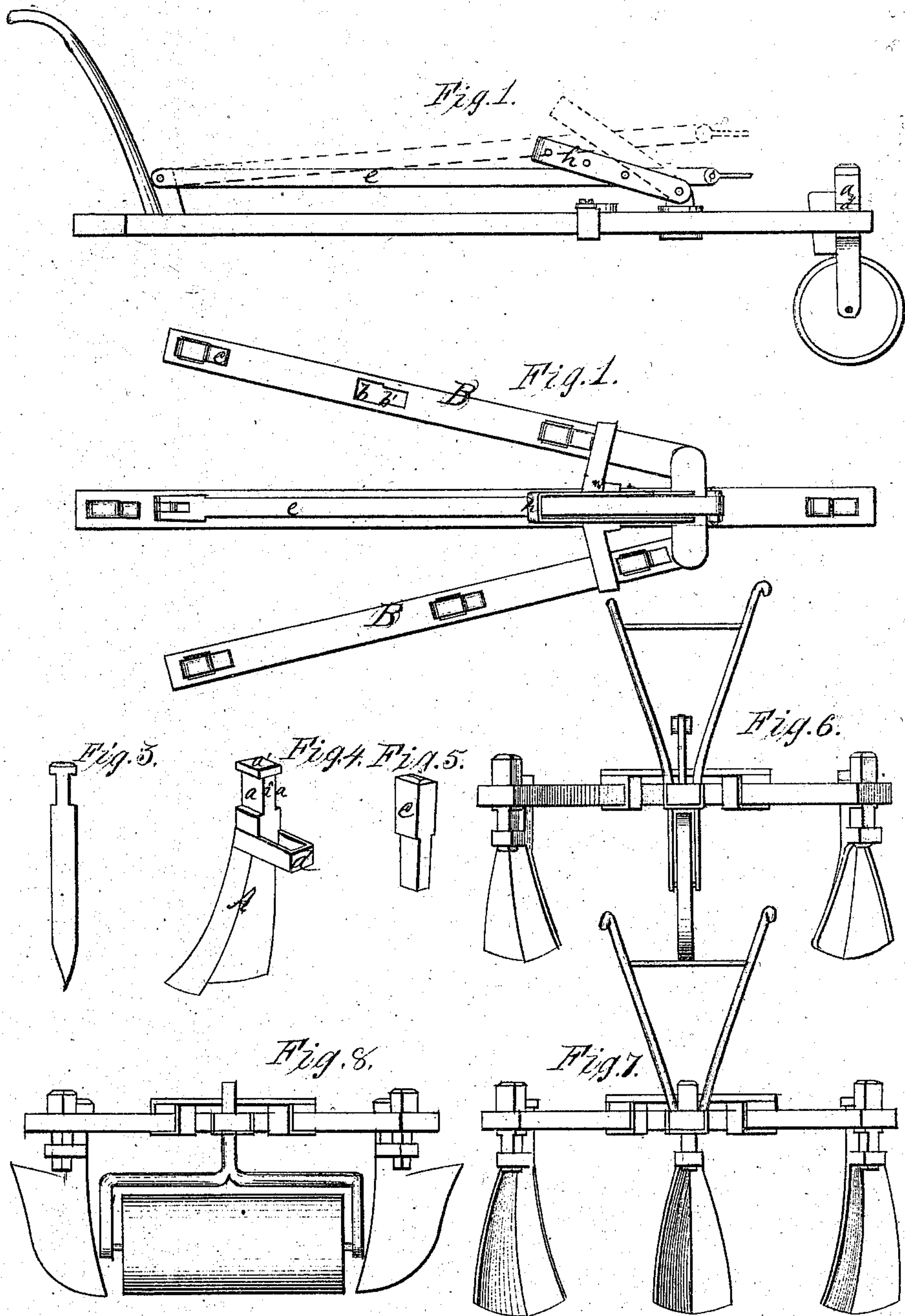


D. S. EARLY.
CULTIVATOR.

No. 87,400.

Patented Mar. 2, 1869.



Witnesses.

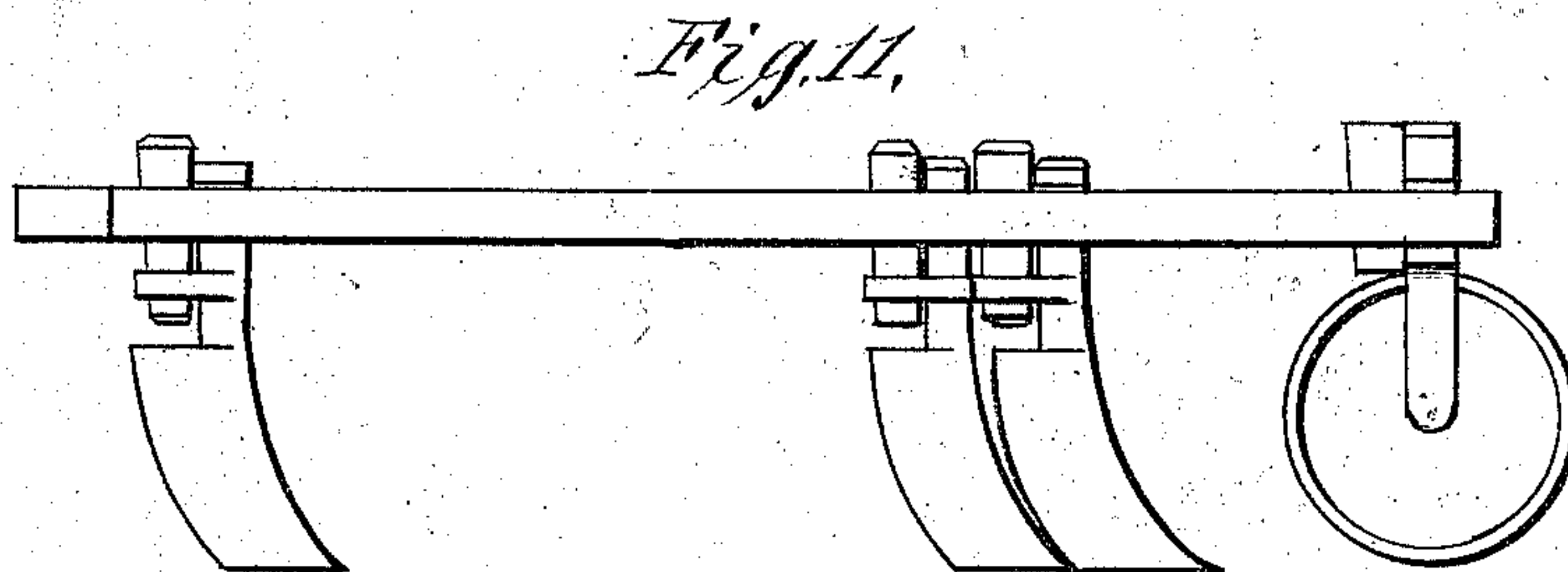
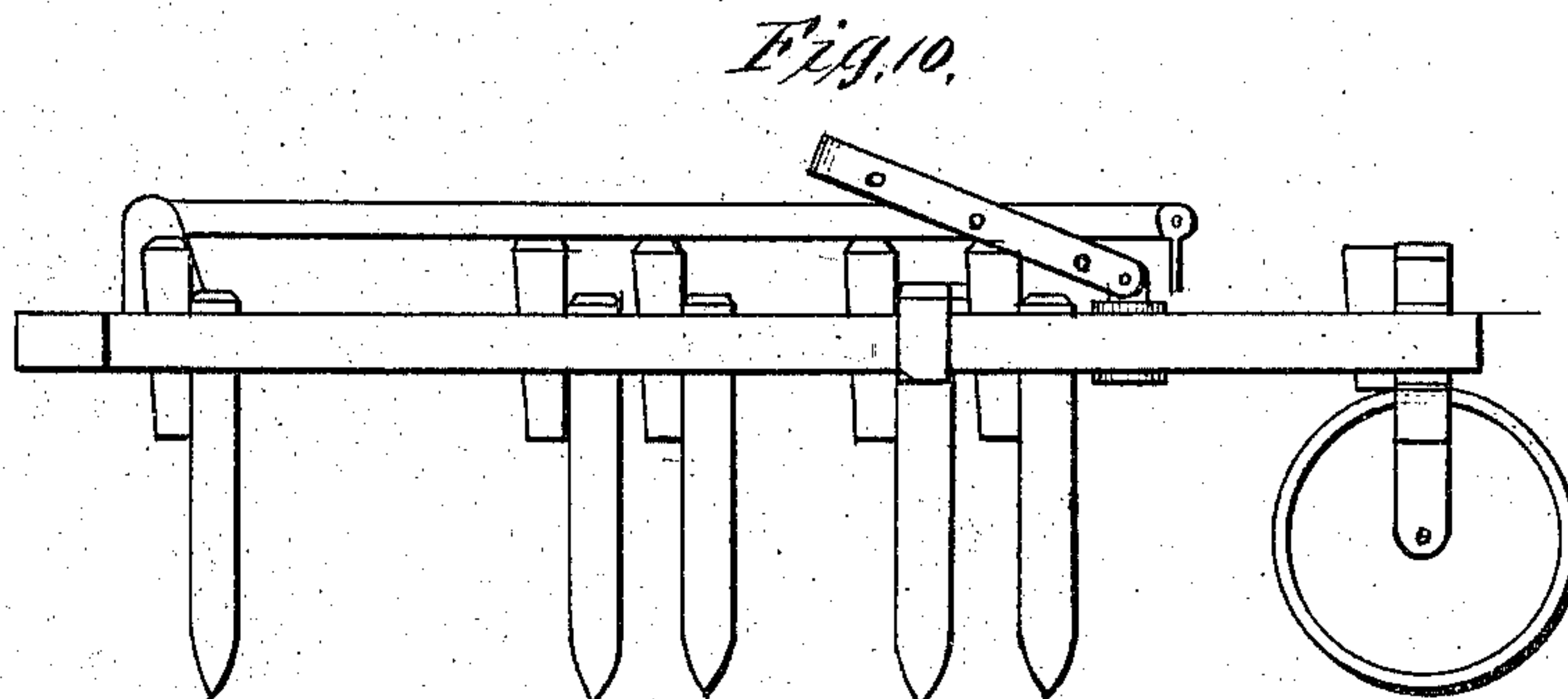
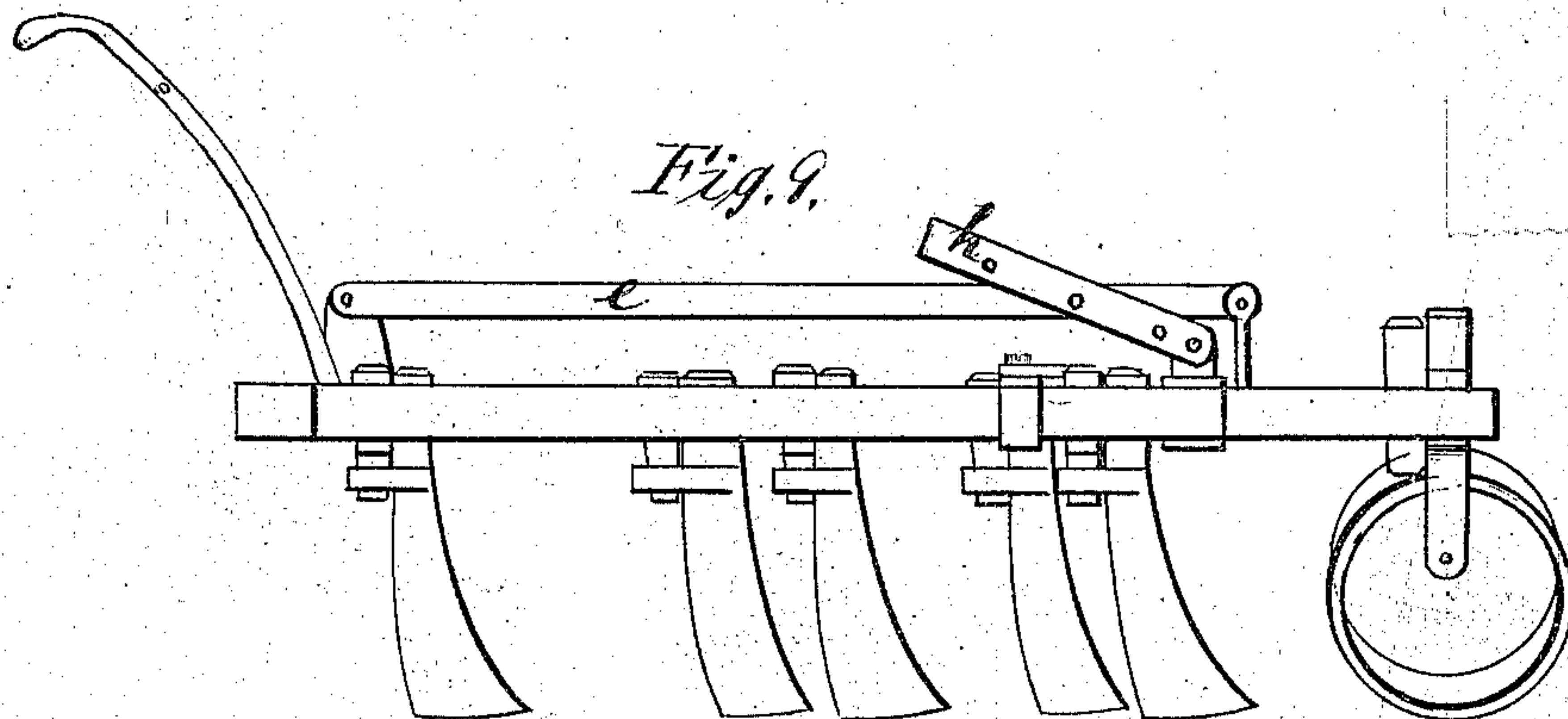
Inventor.

D. S. Early, by
Geo. E. Brown, Atty

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Witnesses
C. O. Brown
Chas. Howardway.

Inventor
D. S. Early by
Geo. E. Pomeroy, Atty.

United States Patent Office.

DANIEL S. EARLY, OF HUMMELSTOWN, PENNSYLVANIA.

Letters Patent No. 87,400, dated March 2, 1869.

IMPROVEMENT IN CULTIVATORS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, DANIEL S. EARLY, of Hummelstown, in the State of Pennsylvania, have invented a new and useful Improvement in Cultivators; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and letters of reference marked thereon, making a part of this specification, in which—

Figure 1 is a side elevation of my cultivator-frame.

Figure 2 is a plan view.

Figure 3 is a front elevation of a harrow-tooth.

Figure 4 is a rear elevation of a cultivator-tooth.

Figure 5 is a plan view of the same.

Figure 6 is a rear elevation of the machine when arranged for scoring.

Figure 7 is a like view of the machine when arranged for cultivating.

Figure 8 is a rear elevation of the machine when arranged as a corn-coverer.

Figure 9 is a side elevation of the machine when arranged as a shovel-harrow.

Figure 10 is a side elevation of it when made into a tooth-harrow.

Figure 11 is a like view of it when used as a broadcast-grain-sower.

To enable those skilled in the art to make and use my invention, I now proceed to describe its construction and operation.

Similar letters in the drawings refer to like parts.

This invention consists in providing a cultivator or harrow-tooth, with two recesses of equal size, one on each side, and both near the top, the formation of the recesses leaving a head upon the upper end of the tooth, and in making, in the frame of the cultivator or harrow, two conjoined slots, of unequal width, for each tooth, whereof the wider slot receives the head of the tooth, which may then be slid forward, so that the narrower slot shall receive that part of the tooth made smaller by the formation of the aforesaid recesses, which done, the head before mentioned prevents the tooth from falling down through the said narrower slot, and the tooth cannot be pushed up through the slot, and a key inserted in the wider slot behind the tooth, securely fastens it to the frame, whence it may easily be detached.

The invention also consists in providing such a tooth with a socket extending rearward, for the reception of the lower part of the key above referred to.

The invention also consists in attaching the whiffle-tree to the front end of a tongue, which tongue is pivoted, at its opposite extremity, to the rear end of the frame, so that the said front end, with the whiffle-tree attached, may be raised at pleasure, and thus elevate the whiffle-tree above the plants, securing the latter against injury, there being a pivoted clevis at the front end of the frame, through which clevis the aforesaid

tongue passes, and by means of which it may be set at any desired elevation.

In the drawings, *e* represents a tongue, pivoted at its rear end to a lug projecting from the middle beam, to the forward end of which tongue I design to attach the whiffle-tree, in order that, by raising the tongue on its pivot, the whiffle-tree may be elevated to any height necessary to cause it to clear the plants among which the machine may be running.

To set the tongue at the required height, I employ a clevis, *h*, pivoted at its lower end to a lug projecting from the band connecting the forward ends of the two outer beams, through which clevis the tongue passes, both tongue and clevis being provided with a sufficient number of holes to enable them to be fastened together, by a pin, at any desired angle.

A represents a cultivator-tooth, in which are made, near its upper end and upon opposite sides, two recesses, *a a*, of equal size, by the formation of which a head, *a'*, is left upon the top of the tooth.

B represents a cultivator-frame, in which are made, for the reception of each tooth, a double slot, *b*, composed of two parts, *b b'*, whereof the part *b* is of just sufficient width to receive the head *a'* of each tooth, and the part *b'* is just wide enough to receive the narrow part *a''* of each tooth. If, then, the head *a'* be passed from the under side up through the wider slot, *b*, and the tooth be then slid forward, so that its narrowest part, *a''*, occupies the slot *b'*, the head *a'* prevents the tooth from falling down through the slot, nor can the tooth be pushed up through it, and a key, *c*, inserted behind, in the slot *b*, prevents the tooth from sliding back, and it is thus securely attached to the frame, whence it may be detached, simply by removing the key and sliding back the tooth, so that the head *a'* may slip through the slot *b*.

No bolts or nuts forming part of this system of connection, neither hammer nor wrench is required in attaching or detaching the teeth.

Extending rearward from the tooth, and at a point near enough to the top to enable it to receive the lower end of the aforesaid key, is a socket, *d*, which tends to more effectually retain the key in its place.

By thus making the teeth readily attachable and removable, I am enabled to replace one kind with another of a different sort, and thus combine in one machine no less than seven different mechanisms, to wit:

First, a scorer, made by placing one shovel at the rear end of each outer beam, as seen at fig. 6.

Second, a cultivator, made by adding to the scorer a third shovel, as seen at fig. 7.

Third, a shovel-harrow, made by adding to the cultivator two additional shovels upon each outer beam, as seen at fig. 9.

Fourth, a corn-plow, made by removing all the shovels, and placing a share at the rear end of each outer beam, as seen in fig. 8.

Fifth, a tooth-narrow, made by removing all the shovels, and replacing them with teeth, as seen in fig. 10.

Sixth, a broadcast grain-coverer, made by removing all the shovels, and replacing them with shares, as seen in fig. 11

Seventh, a corn-coverer, made by adding to the corn-plow, a roller, placed at the rear end of the centre-beam, and setting to two outer beams sufficiently near each other, as seen at fig. 8.

The vertical beam of the gauge-wheel may be provided with two or more pairs of recesses, one below the other, with an additional head, *a'*, between the two pairs, which provision enables the wheel to be so set as to cause the teeth to cut deep or shallow, at pleasure.

The frame here shown is that patented by myself, October 6, 1868.

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

1. The tongue *e*, in combination with the clevis *h*, as and for the purpose set forth.
2. The tooth *A*, in combination with the socket *d*, in the manner and for the purpose explained.
3. The tooth *A*, provided with the recesses *a a* and head *a'*, substantially as described.
4. The tooth *A*, provided with the recesses *a a* and head *a'*, in combination with the conjoined slots *b b'* and key *c*, substantially as described.

DANIEL S. EARLY.

Witnesses:

JOHN T. FOX,
ABNER HUMMEL.