

No. 769,049.

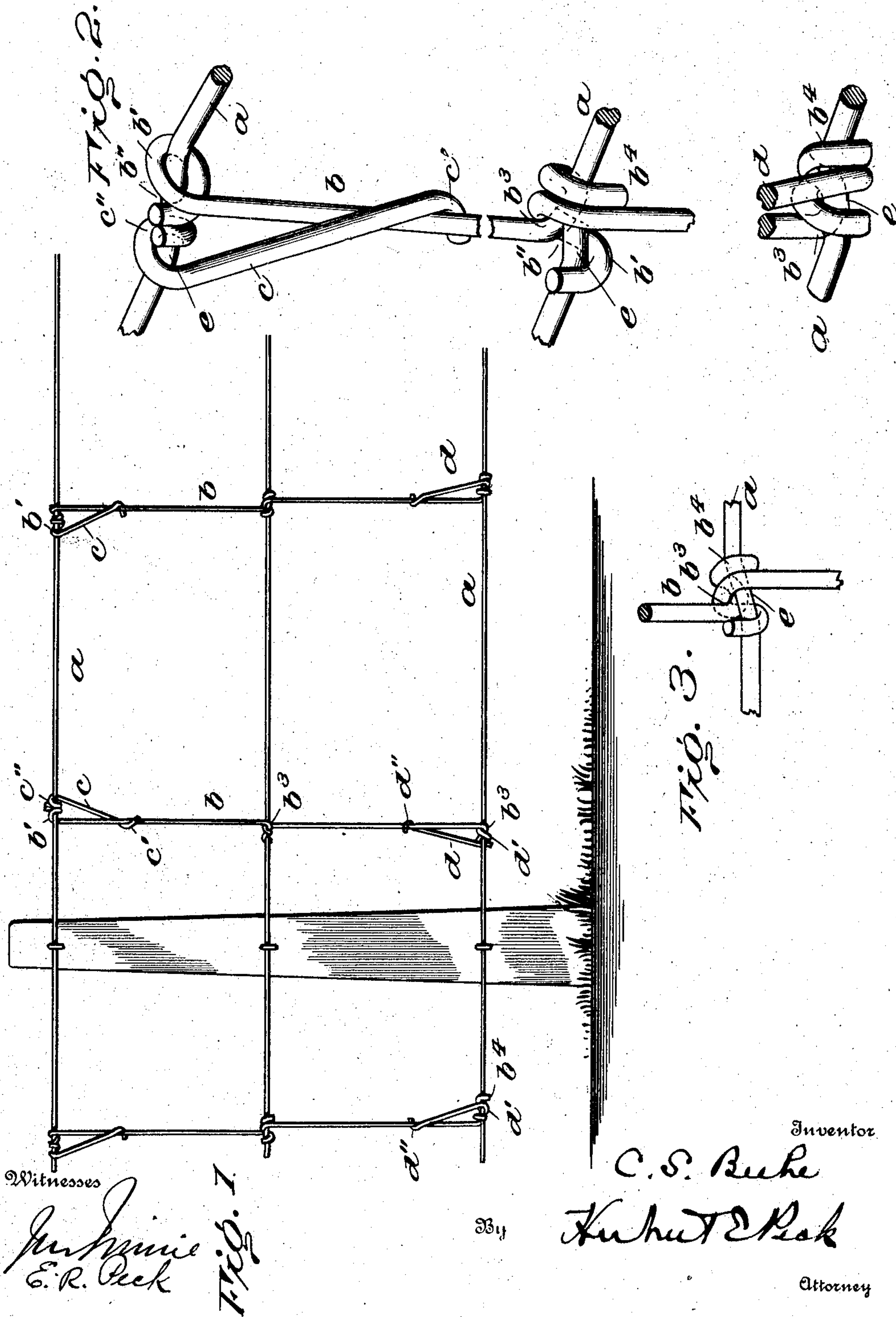
PATENTED AUG. 30, 1904.

C. S. BEEBE.  
WIRE FENCE.

APPLICATION FILED MAR. 26, 1904.

NO MODEL.

2 SHEETS—SHEET 1.



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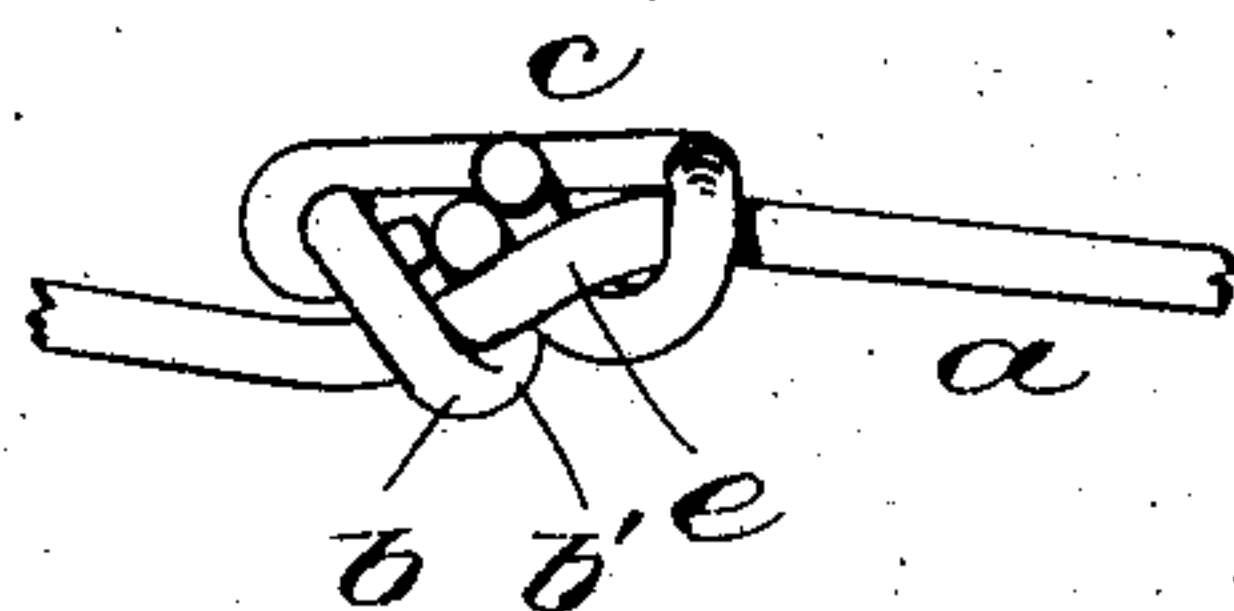
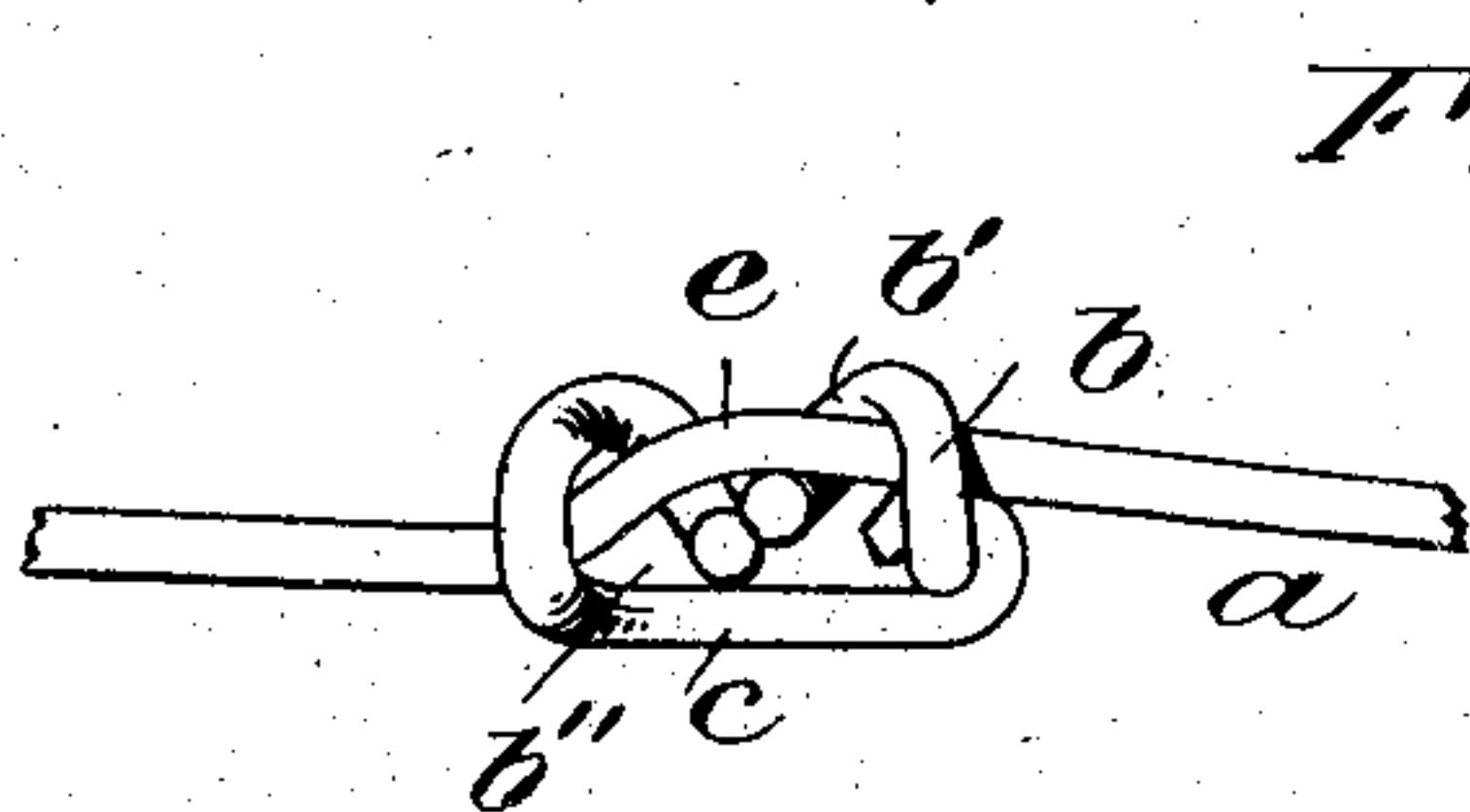
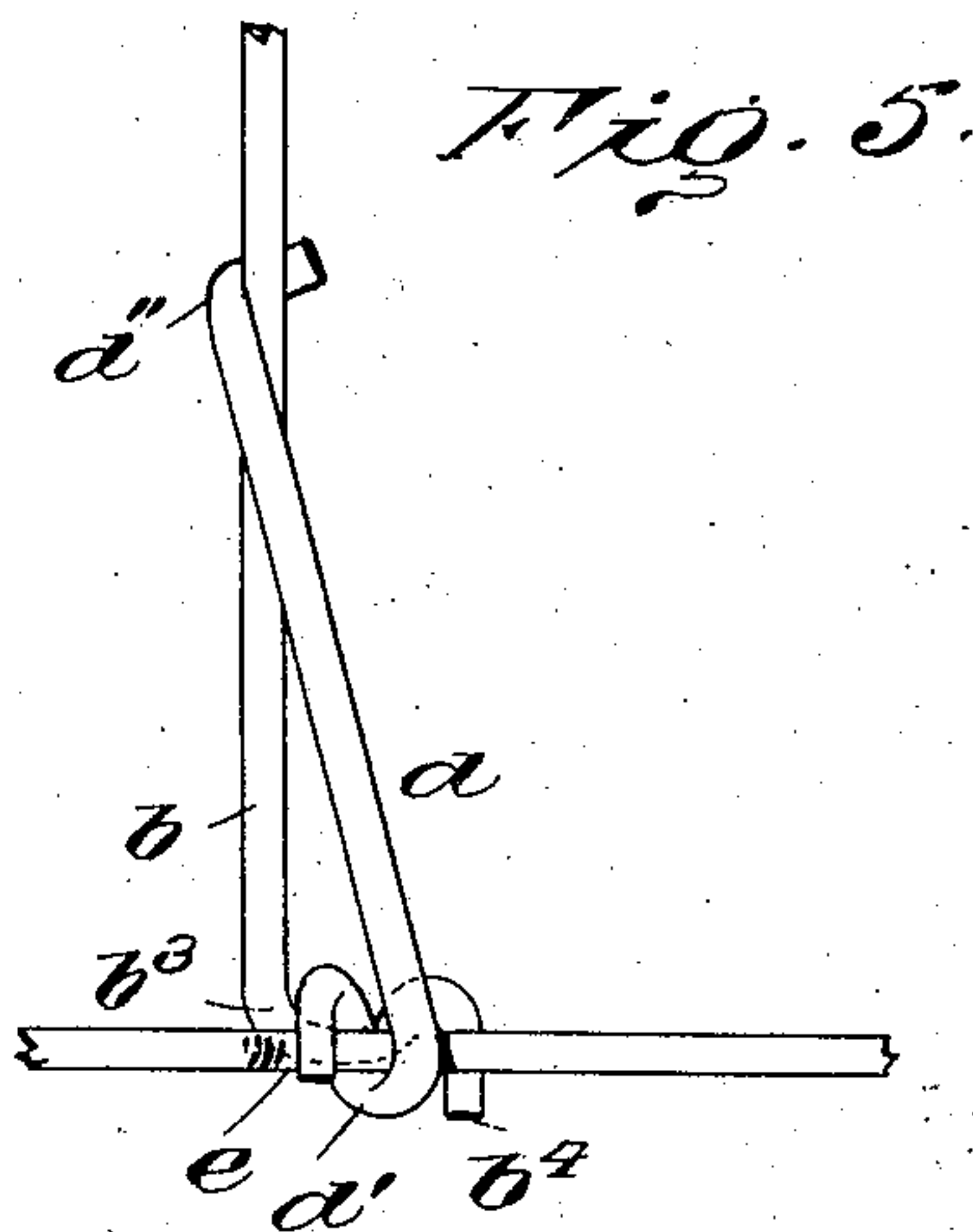
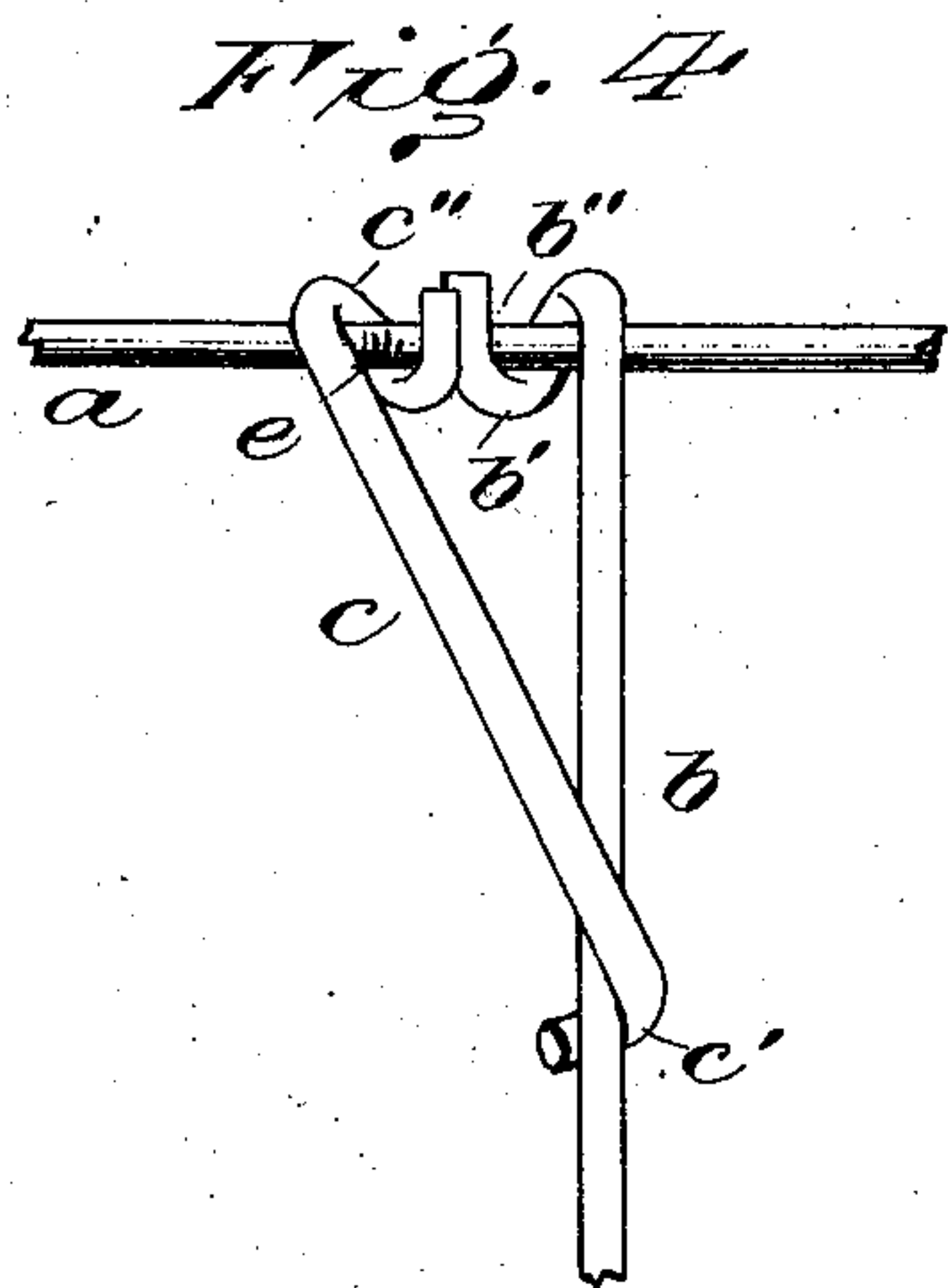


Fig. 7.

Fig. 8.

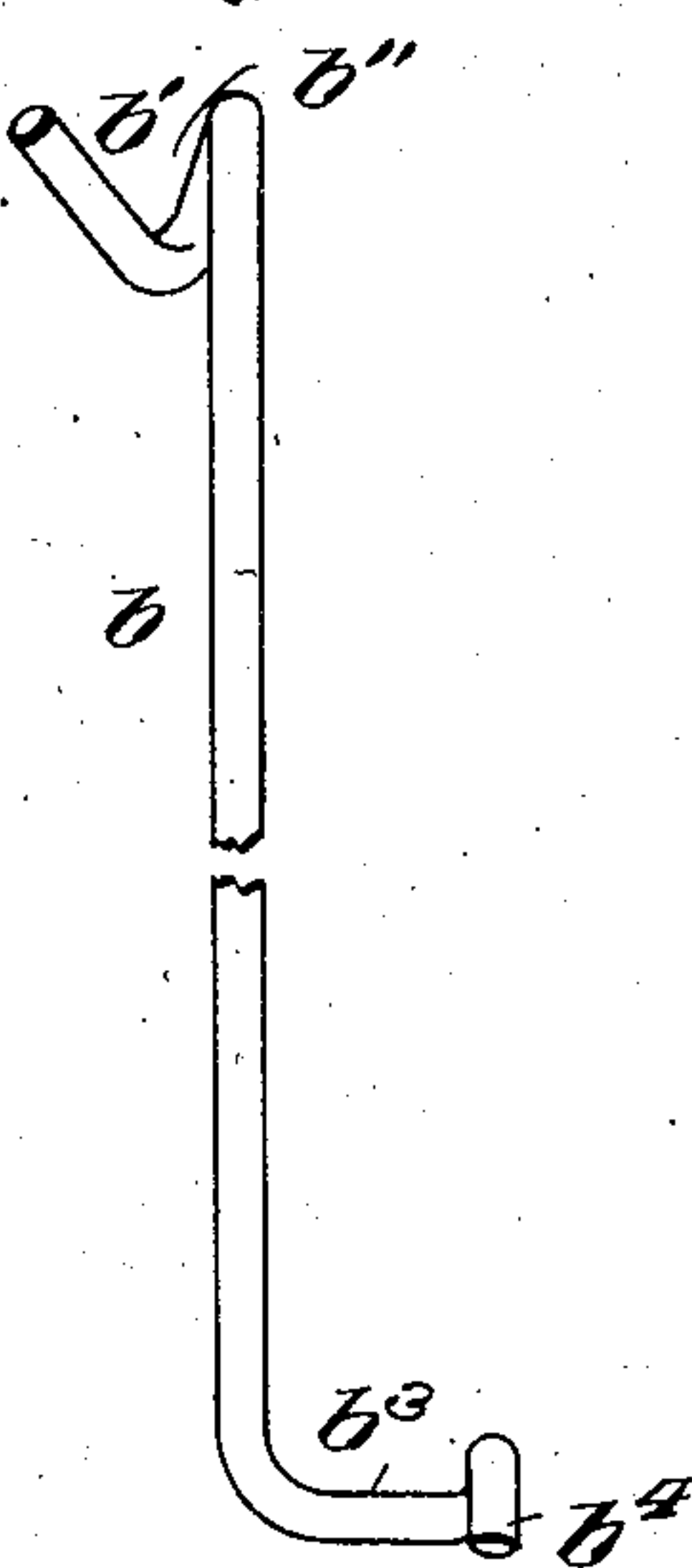
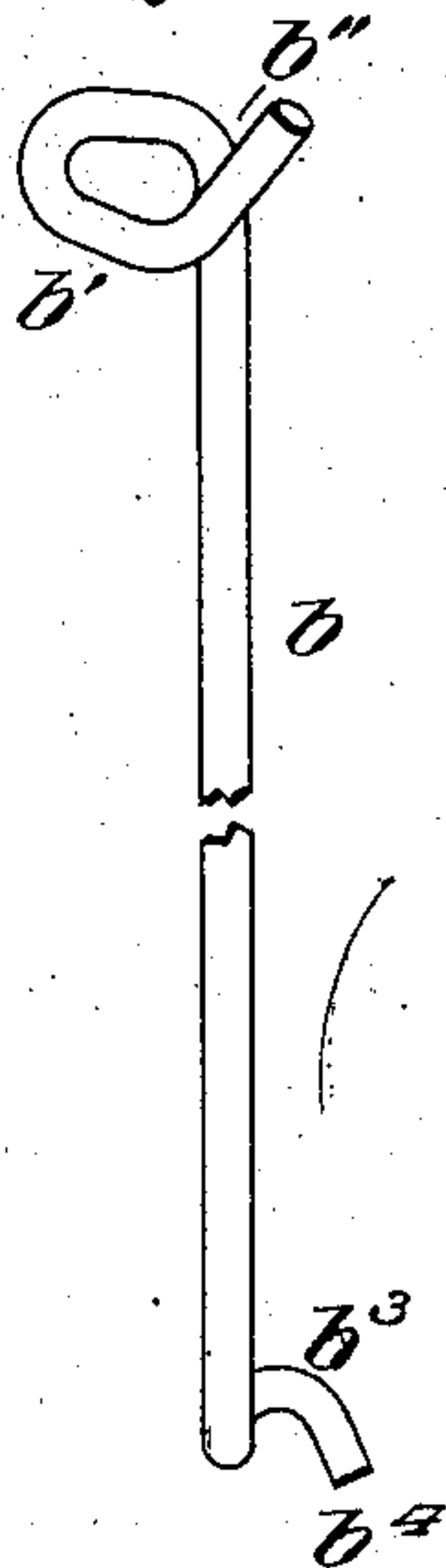
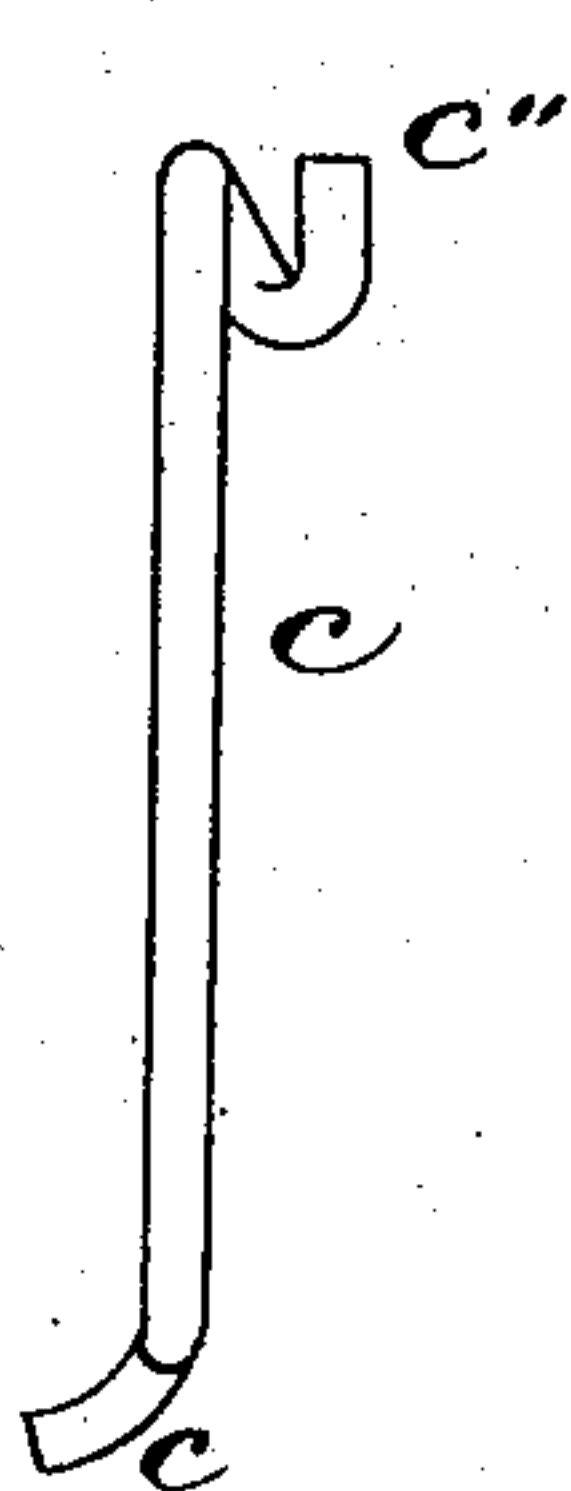
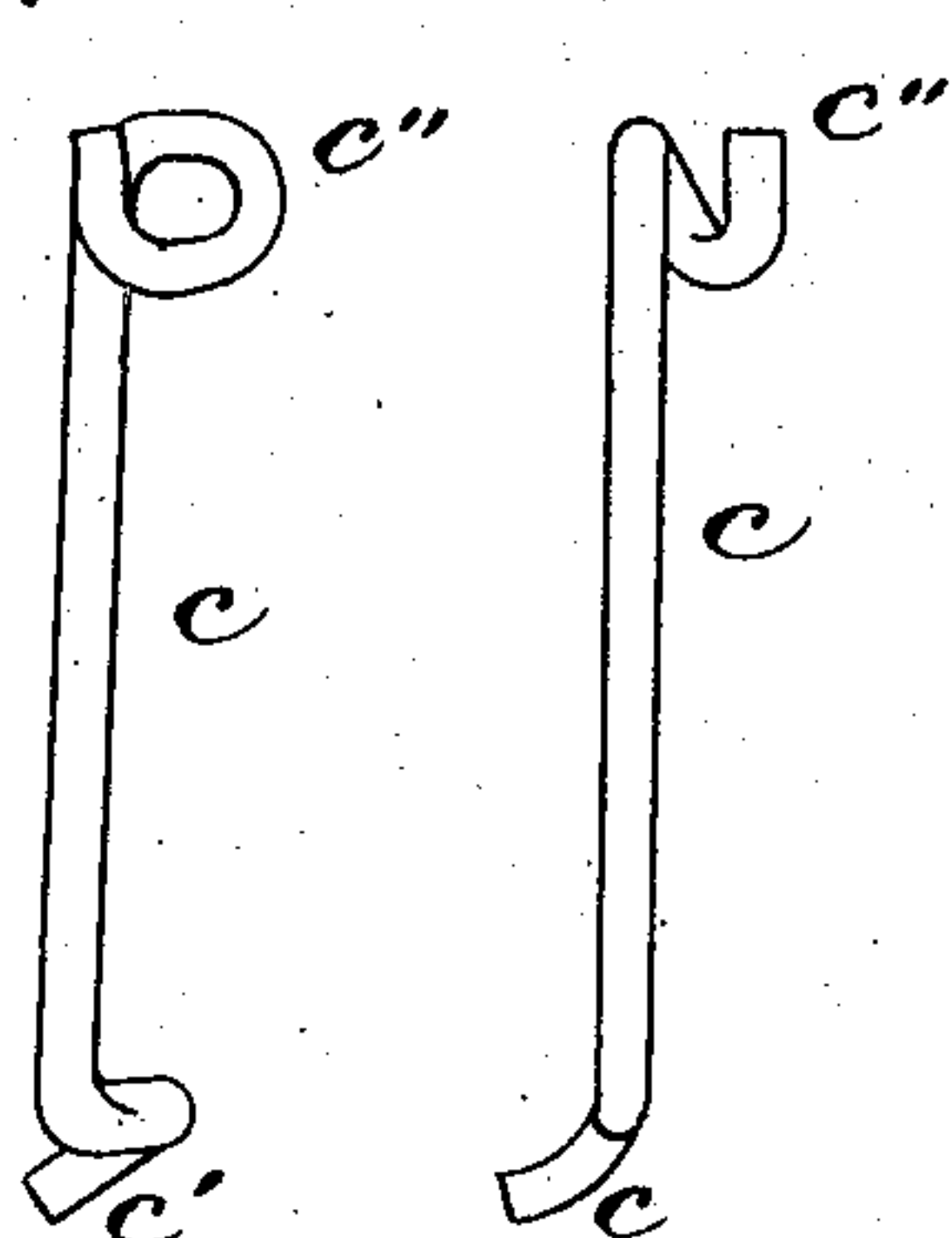


Fig. 9.

Fig. 10.



Witnesses

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By

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# UNITED STATES PATENT OFFICE.

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## WIRE FENCE.

SPECIFICATION forming part of Letters Patent No. 769,049, dated August 30, 1904.

Application filed March 26, 1904. Serial No. 200,167. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES S. BEEBE, a citizen of the United States, residing at Racine, Racine county, State of Wisconsin, have invented certain new and useful Improvements in Wire Fences; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to certain improvements in stays or pickets for application to line-wires of fences or the like.

An object of my invention is to provide improvements in stays for binding together the line-wires of fences or the like, whereby the stays can be made and sold complete as articles of manufacture and in condition for application to previously-stretched line-wires without requiring the employment of special tools for locking stays.

A further object of the invention is to provide certain improvements in the stays shown in United States Letters Patent issued to me August 12, 1902, No. 706,883.

My invention consists in certain novel features in construction and in combinations or arrangements of parts, as more specifically described hereinafter.

Referring to the accompanying drawings, Figure 1 is an elevation of a portion of a fence the line-wires of which are locked together by stays in accordance with my invention. Fig. 2 is a detail perspective view showing top, bottom, and intermediate line-wires and the locks between the stays and said line-wires, portions being broken away. Fig. 3 is a detail elevation of the lock between an intermediate line-wire and two stay-ends. Fig. 4 is a detail elevation of the lock at the upper end of the top stay. Fig. 5 is a detail elevation of the lock at the lower end of the bottom stay. Fig. 6 is a top-plan of two locks at the upper ends of adjacent top stays, showing the reverse arrangement of adjacent locks on the top line-wire to maintain the said top line-wire under torsion. Figs. 7 and 8 are side elevations from different sides of one of the stays. Figs. 9 and 10 are elevations from

different sides of one of the top locking-wires. 50

In the drawings, *a* represents the usually parallel suitably spaced and secured line-wires of a fence or other wire construction. *b* represents the wire stays. *c* is the top locking-wire, and *d* is the bottom locking-wire. 55

Each stay is usually formed of a single length of strong heavy wire. The stays can be made of different standard lengths, according to the usual spacing distances between line-wires, so that retailers can carry stays of different lengths in stock or the consumer can order stays of various lengths direct from the manufacturer or the distributor. Each stay is designed to extend between two adjacent line-wires and at its ends to be locked thereto, 60 so that by a vertical row of stays arranged in continuation of each other and locked together at their meeting ends the line-wire of a fence (or a series of the line-wire) will be most strongly and firmly bound together and stayed. 65 Each stay has the long usually straight body portion or wire length at its upper end terminating in the lateral locking coil or spiral *b'*, having the side opening *b''*, and at its lower end terminating in the lateral wire length *b<sup>3</sup>*, 70 at its outer portion terminating in the vertical hook or arch *b<sup>4</sup>*. The upper end portion of the wire length forming the stay is bent laterally and spirally to form said open coil *b'*. Beside the upper end of the stay and the 80 free end of the wire is carried upwardly, so that the coil consists of usually a slightly longer length of wire than would be necessary to form barely a single convolution. The wire spiral or coil is sufficiently open to 85 form the side opening *b''* of a size to permit passage of a line-wire therethrough and into the coil, and the axis of the coil is transverse of or at an angle to the length of the stay, and usually the coil is formed on a mandrel 90 or former somewhat elliptical in cross-section, whereby the eye or loop formed by the coil is usually elliptical to permit two parallel wires to extend therethrough and be gripped thereby. The locking-coil *b'* and its side opening *b''* are so arranged that when the stay is 95 held in a horizontal position or about parallel with the line-wire the coil can be moved later-



ally, so that the line-wire moves through the side opening  $b''$  into the coil and until the coil surrounds the line-wire. The lower end of the wire is bent laterally approximately at right angles to form said transverse end or end portion  $b^3$ , which rests beside and approximately parallel with a line-wire. The wire is bent laterally or outwardly and upwardly from the outer extremity of said portion  $b^3$ , and then downwardly to form said arch or hook  $b^4$ , which is arranged vertically and opens downwardly and is in a vertical plane about at right angles to the vertical plane of the portion  $b^3$ , so that said hook will straddle down over the line-wire against and beside which the portion  $b^3$  rests. The portion  $b^3$  is comparatively short to accommodate between the hook  $b^4$  and the straight length of the stay the locking-coil of the next stay below, which coil embraces and grips the line-wire and said portion  $b^4$ .

In applying the stays to a series of line-wires the top stay is first applied to the top line-wire of the series by slipping its locking-coil laterally onto said line-wire, as hereinbefore described. The stay is then swung downwardly to a vertical position, with its lower end hook straddling the line-wire next below and its transverse portion  $b^3$  resting beside said wire. The act of thus swinging the stay to a vertical position causes the transverse portions of its locking-coil which pass above and below the top line-wire to move toward and engage and tightly grip and clamp said wire, and this grip is tightened and forcible when the lower end of the stay is forced to the left to carry the stay slightly beyond the vertical. This top stay is held in this position, and the next stay is moved to slip its locking-coil onto the transverse lower end portion of said first-mentioned stay and onto the second line-wire. This second stay is then swung down to the vertical position until its lower end transverse portion and hook properly engage the third line-wire. The locking-coil of this second stay tightly grips and firmly locks the lower end of the first stay to the second line-wire and rigidly holds the lower end of the top stay in the proper position. The series of stays are thus applied from the top downwardly and the lower end of each stay is locked by the next stay below. The lower end of the last stay is locked to the bottom line-wire by the short locking-wire  $d$ , which has its lower end formed into a lateral or transverse end locking-coil  $d'$ , similar to that of the stays. This wire has a short straight length terminating at its upper end in a hook  $d''$ . After the bottom stay has been applied and while its lower end is held to the bottom line-wire the coil  $d'$  is slipped onto the bottom line-wire and portion  $b^3$  of the bottom stay, and said coil is caused to rigidly lock said parts together by swinging the wire  $d$  to the left and forcing the vertical portion

thereof beyond the vertical and across the length of said bottom stay and until the hook  $d''$  slips behind the said vertical length of the stay, and thereby locks said wire  $d$  against releasing movement to the left.

If desired, means can be provided to lock or hold the top stay against movement longitudinally on the top line-wire. For this purpose I show the top locking-wire  $e$ , which consists of a short straight length of wire having the hook  $e'$  at its lower end and the lateral or transverse locking-coil  $e''$  at its upper end. This locking-wire and the top stay are usually applied simultaneously to the top line-wire with their locking-coils end to end and the locking-wire and stay about horizontally and in opposite directions. The stay is then swung down to the left and the locking-wire to the right and the lower end of the locking-wire is carried across the stay until its hook  $e'$  catches on the stay, and thereby holds and locks the stay under tension to the left and the locking-wire under tension to the right, and hence said two members are locked together under great tension against loosening movement, while their coils grip the line-wire with great force and abut, and thereby prevent longitudinal movement thereof on the line-wire, which might otherwise cause loosening movement tending to relieve the locking tension between said members. The top locks—that is, the top locking-wires and stays of different series of stays—are preferably applied alternately from the same side of the fence, so that said top lock of intervening series will be applied from the opposite side of the fence to maintain the torsion on the top line-wire.

To prevent longitudinal movement of the stays on the line-wires, I usually form horizontal crimps or bends  $e$  in the line-wires at the points where the coils of the stays lock thereon. These crimps or bends can be formed by a suitable bar or tool with a transverse wire-receiving groove, so that when the line-wire is placed in the groove and the bar swung horizontally a portion of the line-wire, in length equal to the length of said groove, will assume a diagonal position with respect to the longitudinal length or axis of the line-wire. Advantages are attained by forming the crimps or deflections in horizontal planes. I usually do not employ the crimps and top locking-wires where the stays are used on barbed wire, as the barbs form stops against longitudinal movement of the stays on the line-wires. Material advantages are attained by providing the lower ends of the stays with stops, such as the hooks at the outer extremities of the transverse end portions, so that the locking-coils of the stays below will lie between such stops and the vertical portions of the stays, thereby preventing lateral release of the lower end of a stay from the locking-coil embracing the same. These stops, which can, for instance,



be formed by hooks  $b^4$ , prevent the portions  $b^3$  slipping longitudinally from the locking-coils should excessive force be applied laterally against the stays. Also the hooks  $b^4$ , straddling the line-wires, hold the lower ends of the stays in proper position to and against the line-wires and prevent lateral displacement. The hooks also are of material assistance in properly holding or positioning the lower ends of the stays while the same are being applied or locked.

It is evident that various modifications might be resorted to without departing from the spirit and scope of my invention. Hence I do not wish to limit myself to the exact constructions shown.

What I claim is—

1. As an article of manufacture, a complete stay for locking together adjacent line-wires, consisting of a single straight wire length at one end bent to form the laterally-extending locking-coil having a side line-wire entrance-opening, said coil arranged beside and with its axis at an angle to the axis of said length, the opposite end of said wire length bent approximately at right angles and at its free end terminating in a stop extending laterally from said right-angle end, for the purposes substantially as described.

2. As an article of manufacture, a complete wire stay and lock consisting of the wire length at one end bent to form a lateral locking-coil having a side line-wire entrance-opening, said coil arranged beside the end of said length and having its axis arranged transversely of said length, the opposite end of said length bent approximately at right angles to form the transverse wire length terminating in the upwardly-extending arch or hook arranged transversely of the axis of said right-angle end, substantially as described.

3. In combination, the line-wires having the horizontal angular crimps or deflections, and the wire stays locking said line-wires together and arranged end to end in continuation of each other and in a single vertical series, each stay consisting of a wire length having a locking-coil at one end and a lateral projection at its other end, the coil of each stay embracing and locking said projection of the stay above and the line-wire beside the same.

4. In combination, the line-wires, the vertical series of single wire stays, each stay having at its upper end a lateral locking-coil formed with a side line-wire entrance-opening, and at its lower end bent to form a trans-

verse portion approximately at right angles to the length of the stay and terminating in a lateral projection, each transverse portion resting beside a line-wire and embraced and gripped to the line-wire by the locking-coil of the next stay below, said coils embracing said transverse portions between the lateral projections thereof and the body portions of the stays, whereby the transverse portions are held against slipping longitudinally from the coils.

5. In combination, the line-wires, a vertical series of single wire stays, each stay having at one end a lateral locking-coil with a side opening, and at its opposite end having a laterally-projecting portion, resting longitudinally beside a line-wire and embraced and gripped to the line-wire by the coil of the adjacent stay, and a locking-wire having a lateral coil with a side opening and locked on the top line-wire and abutting against the coil of the top stay locked on said wire, the opposite end of the locking-wire having a hook engaging the body portion of said top stay.

6. A series of line-wires, in combination with a wire stay at its upper end locked to a line-wire and at its opposite end bent to form a lateral portion resting longitudinally beside a bottom line-wire and terminating in a vertical hook straddling and seated on said line-wire, and a locking-wire at its lower end formed with a lateral locking-coil with a side opening, and at its upper end having a hook, said coil embracing and gripping together the line-wire and said lateral portion and said hook caught on the body portion of said stay.

7. In combination, several line-wires, one of which is formed with spaced lateral crimps or deflections, series of wire stays locking said line-wires together, each series consisting of stays arranged end to end, each stay consisting of a wire length having a lateral locking-coil at one end and a lateral projection at the other end, the coil of each stay locking said projection of the stay above and the line-wire beside the same, the top stay embracing said crimped wire at a crimp, and adjacent top stays applied on opposite sides of said wire, as and for the purposes substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

CHAS. S. BEEBE.

Witnesses:

JAMES C. BAILEY,  
RICHARD GRAHAM.