

No. 706,883.

Patented Aug. 12, 1902.

C. S. BEEBE.
WIRE FENCE.

(Application filed Feb. 15, 1902.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

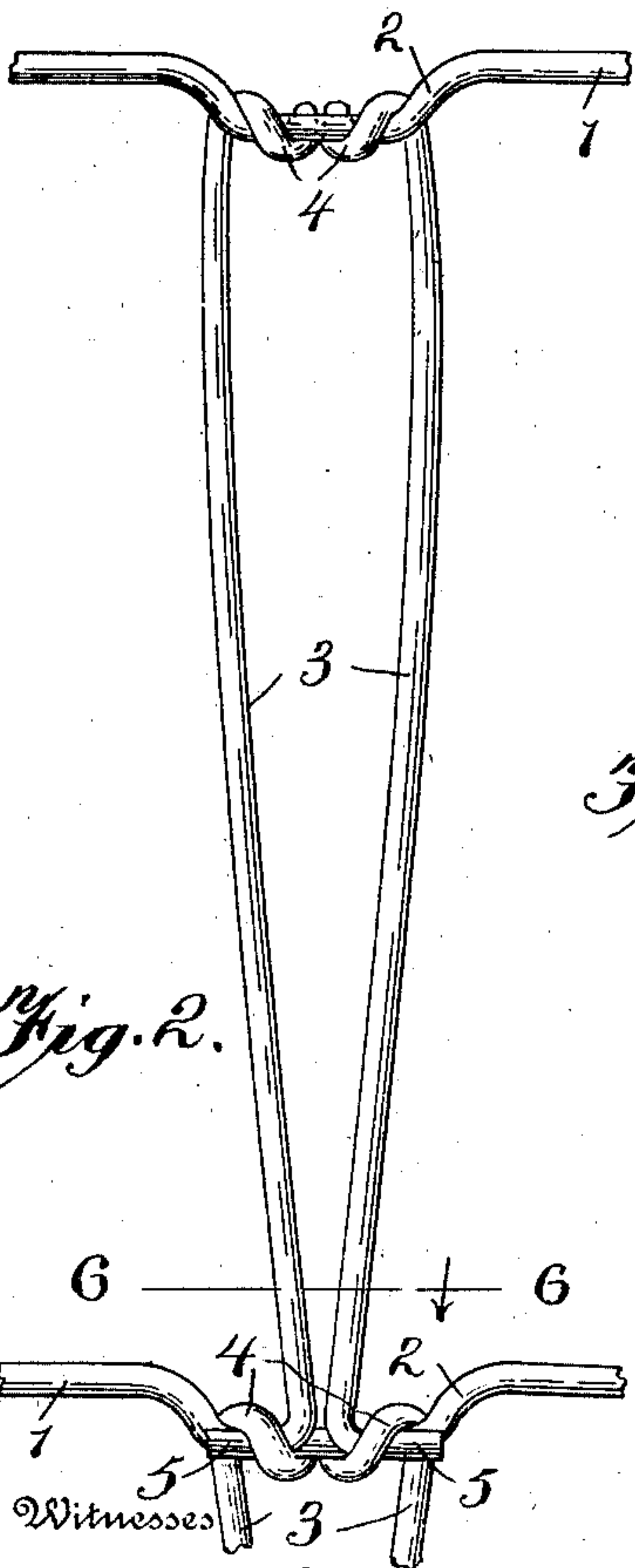
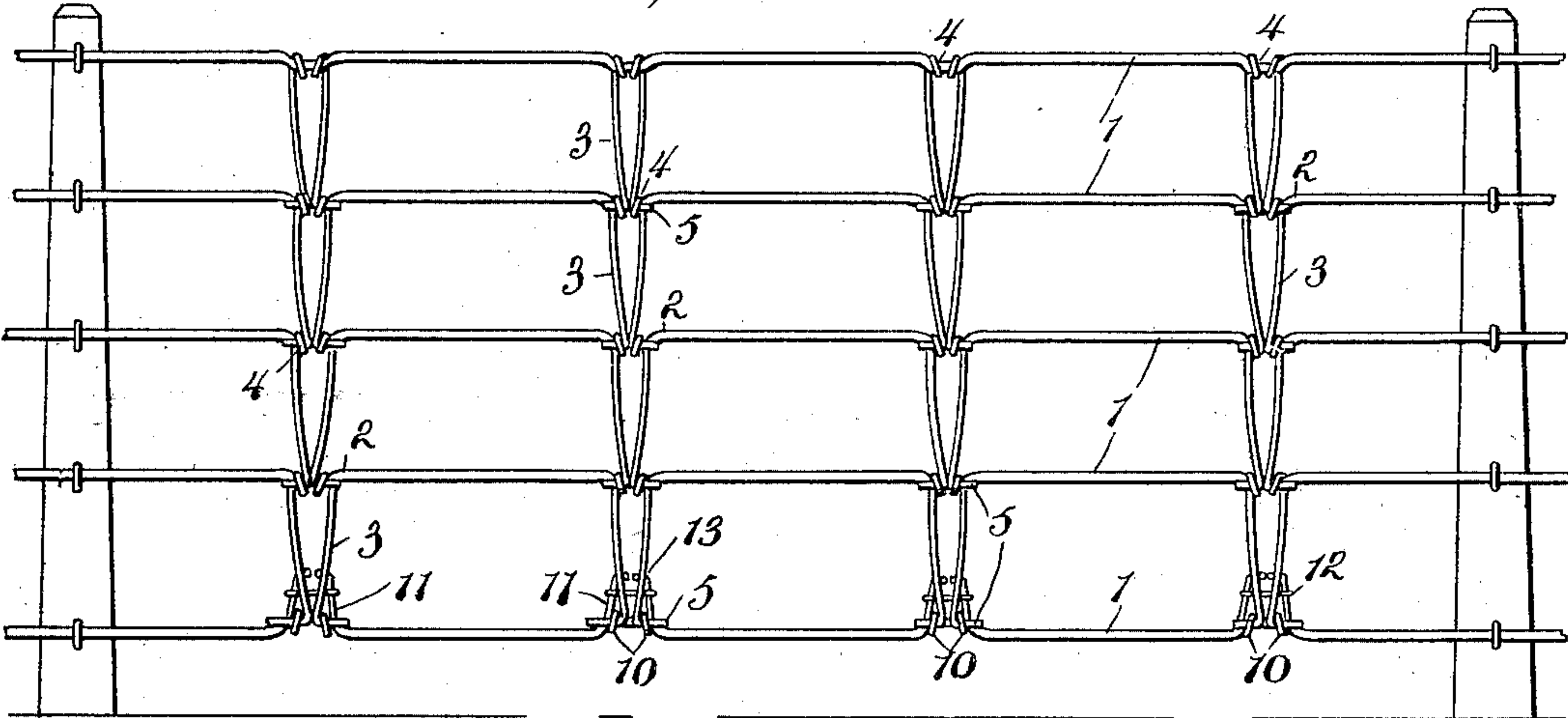


Fig. 3.

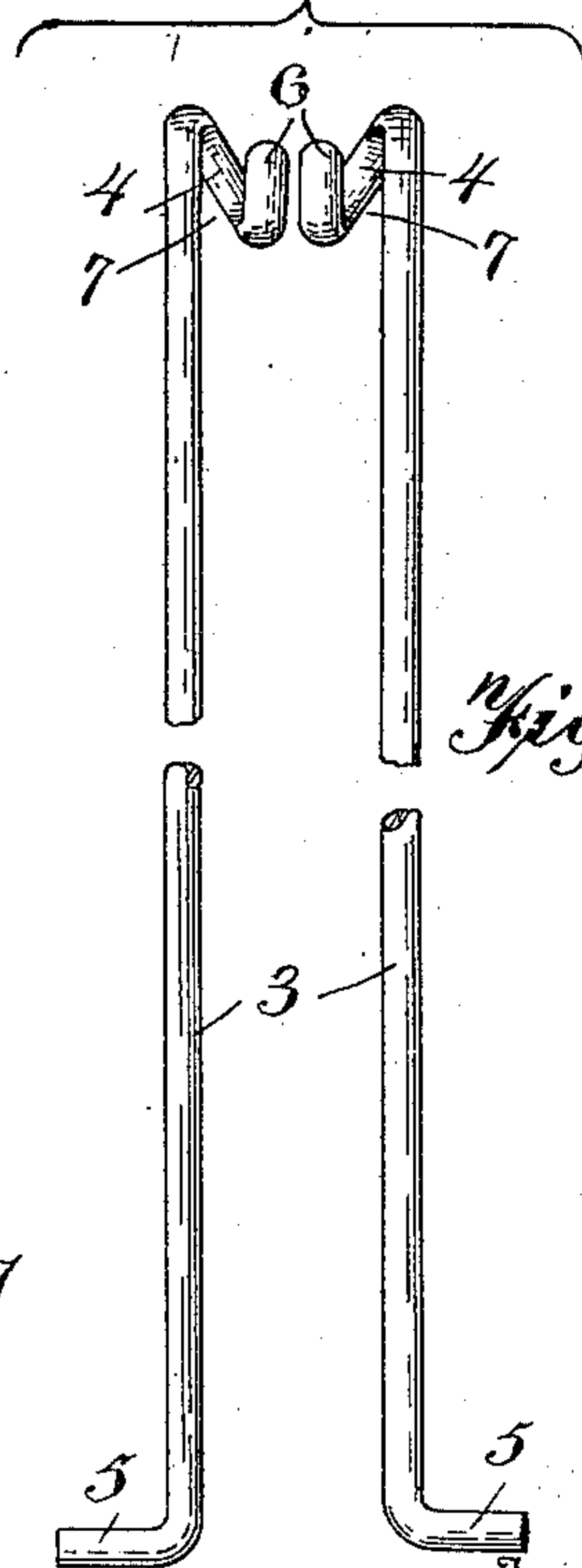
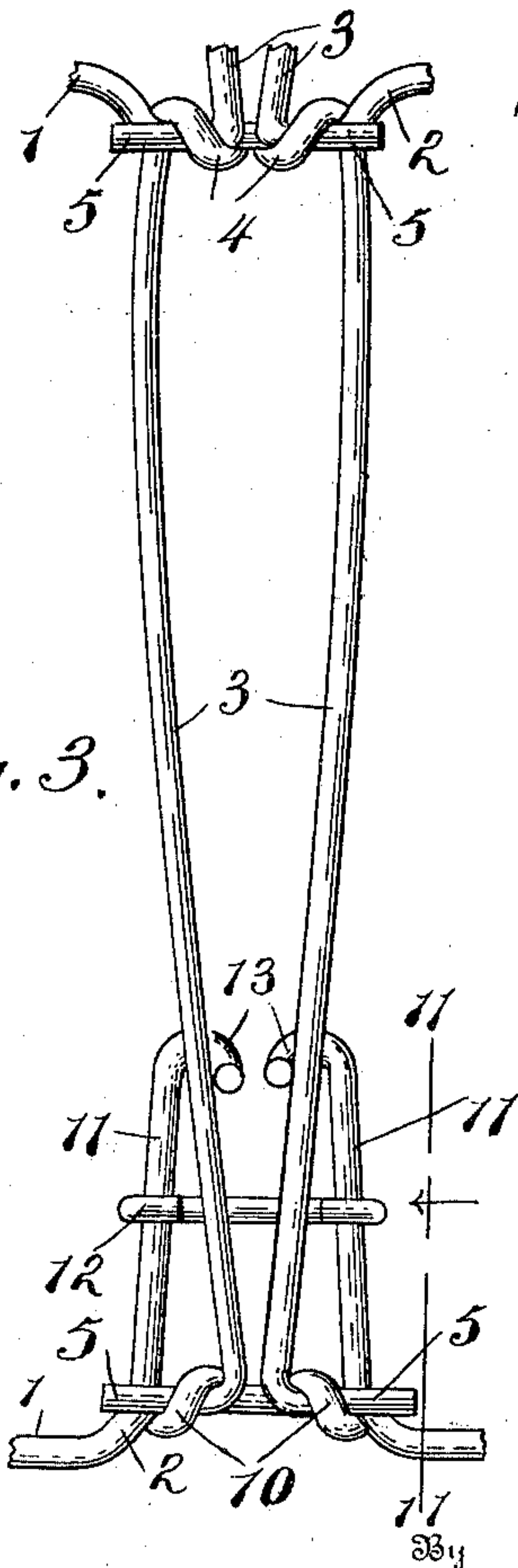


Fig. 4.

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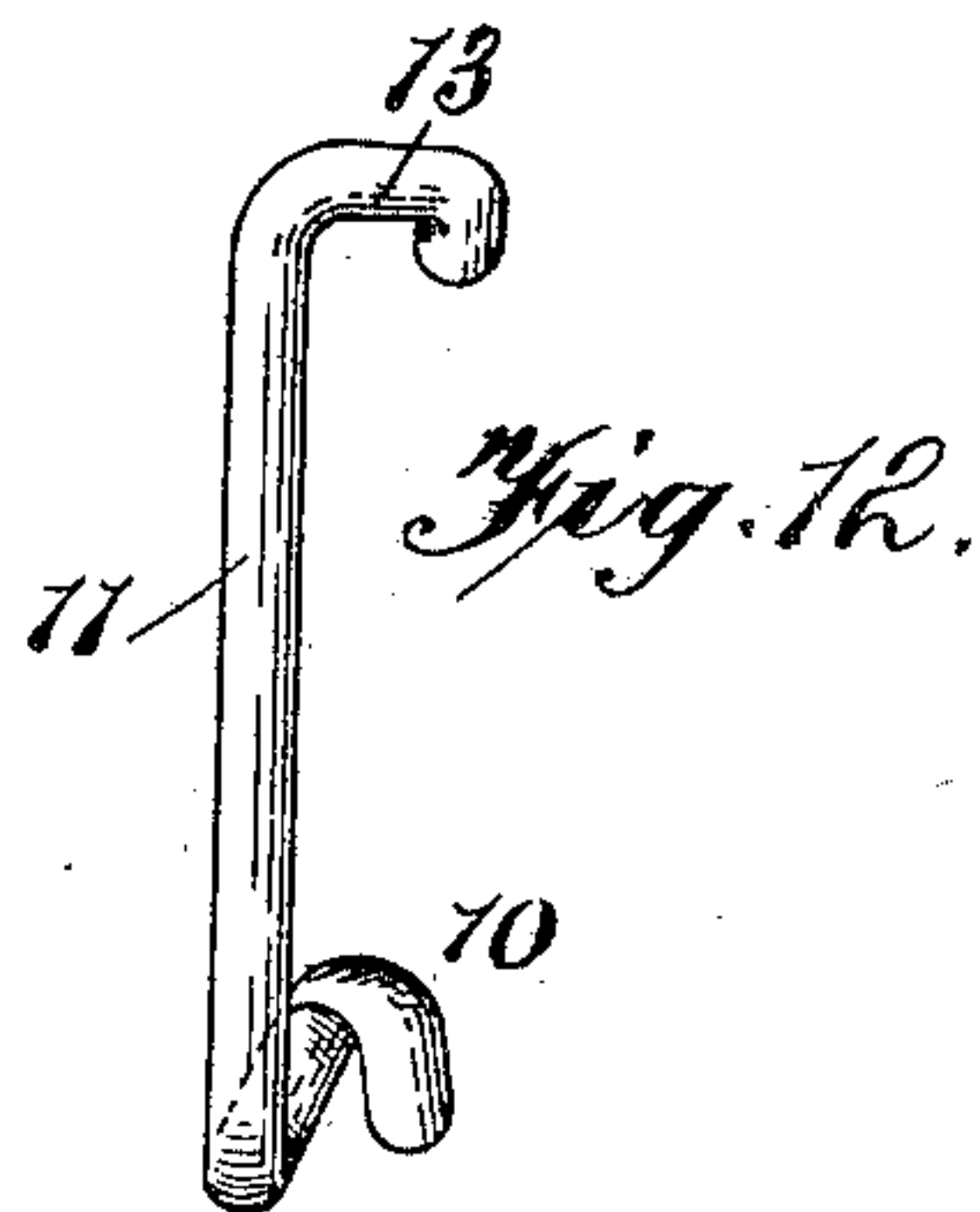
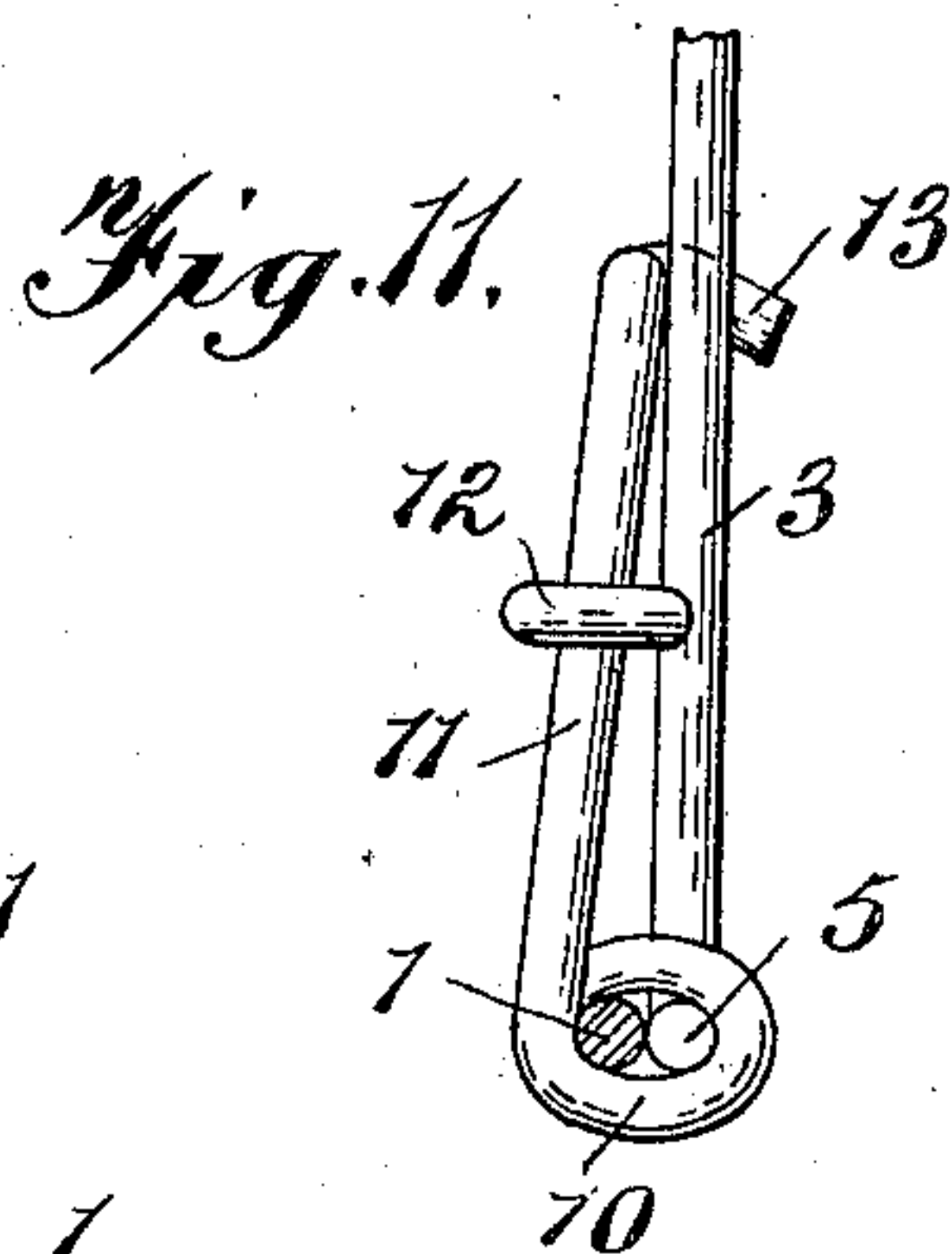
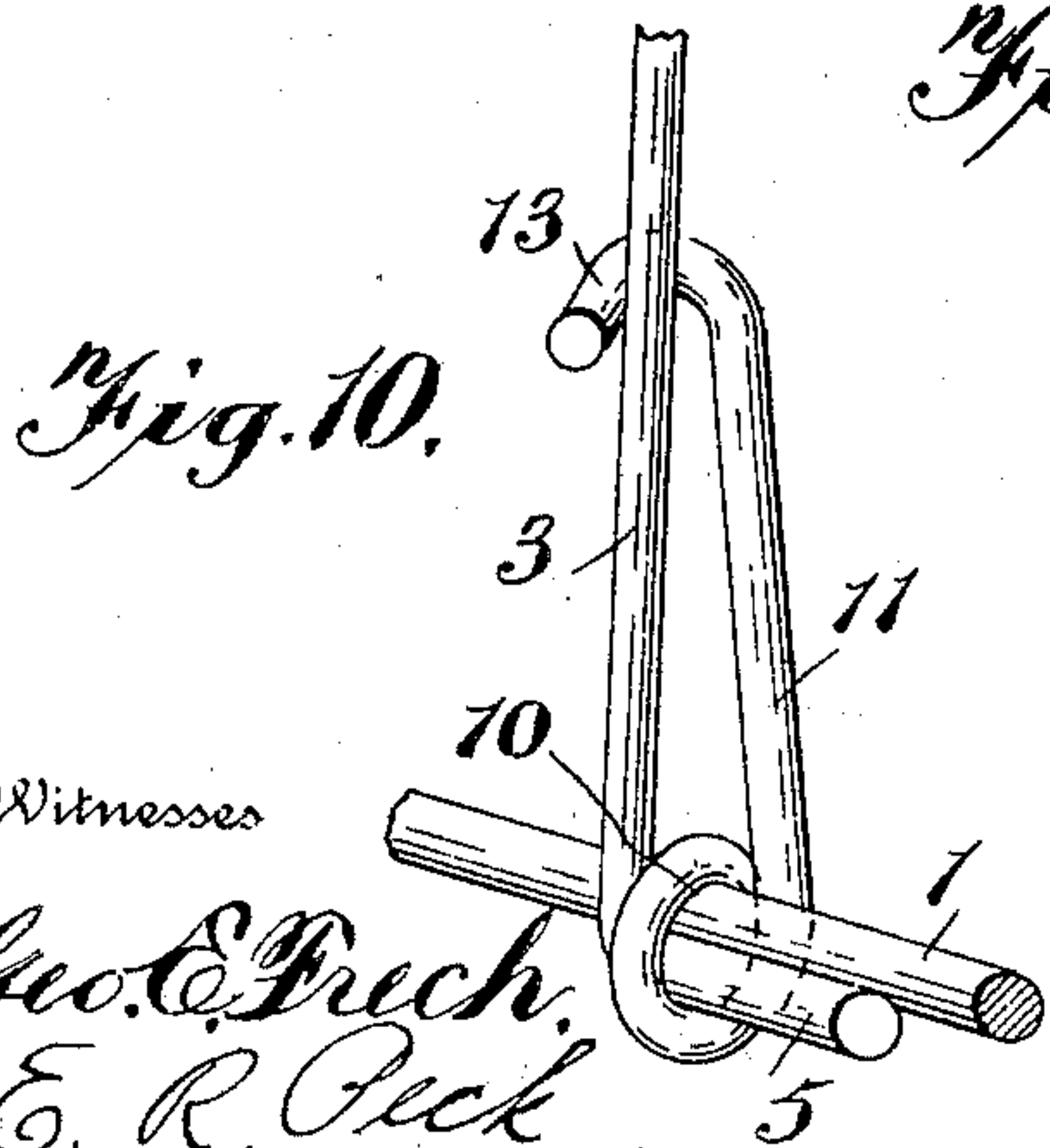
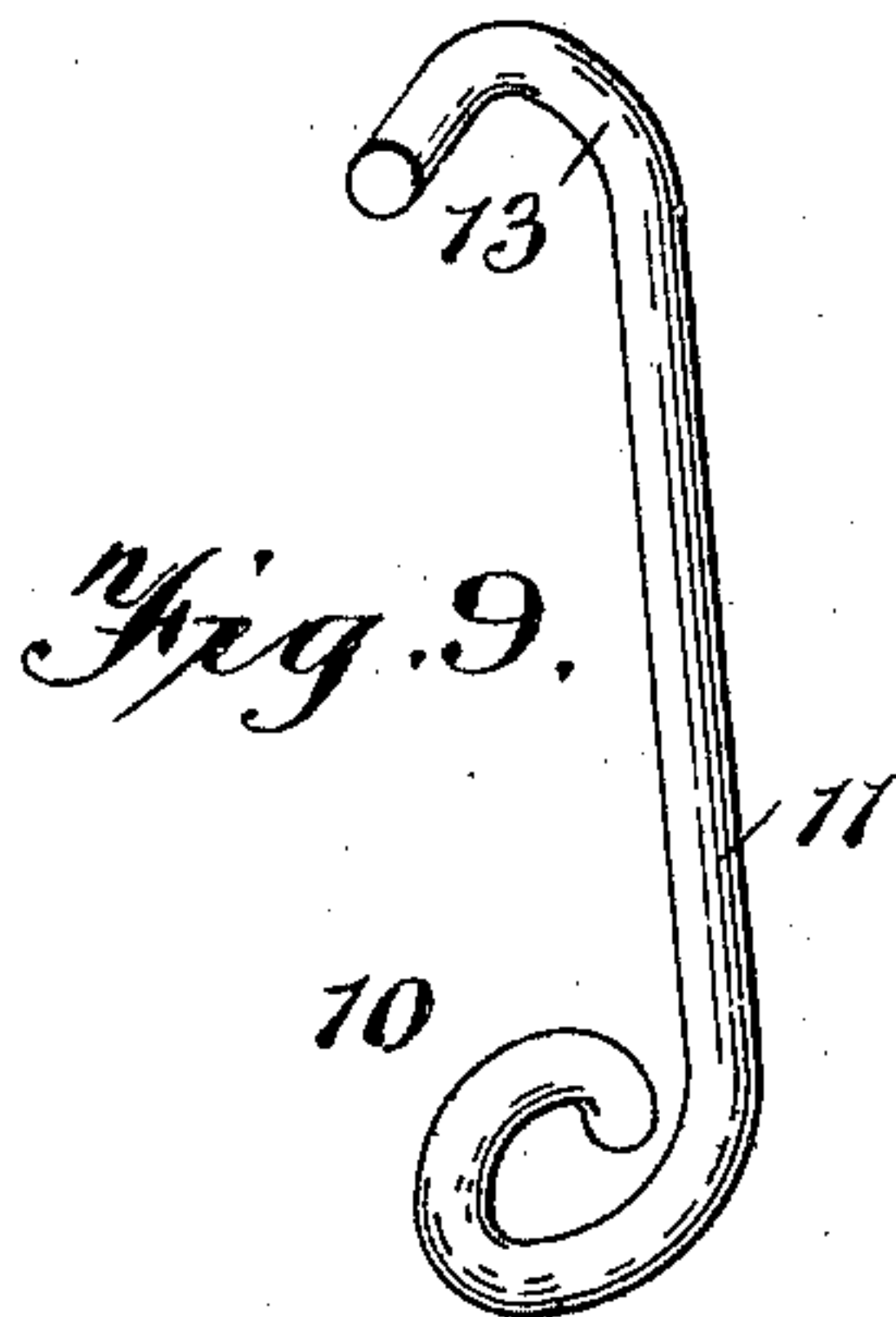
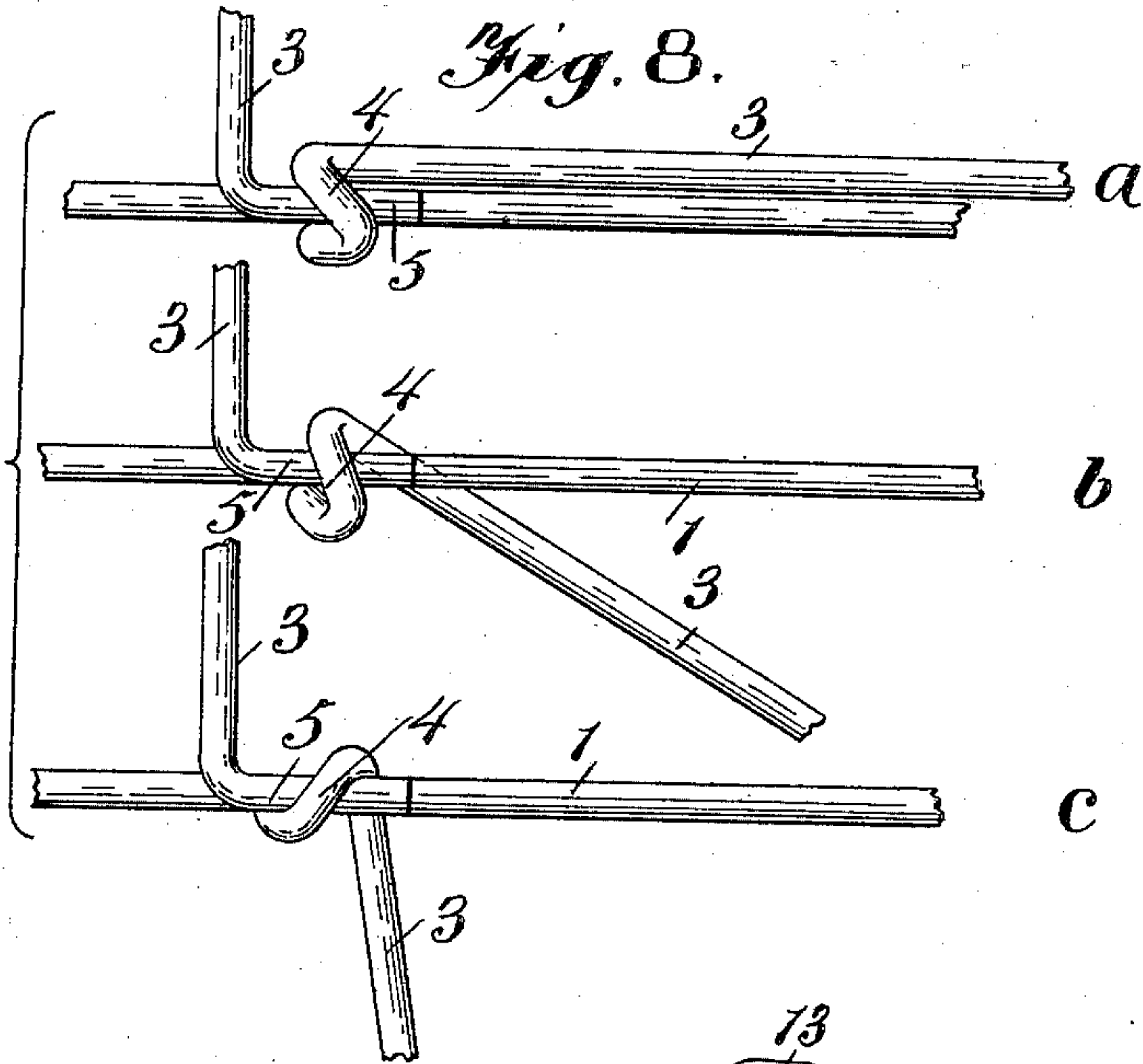
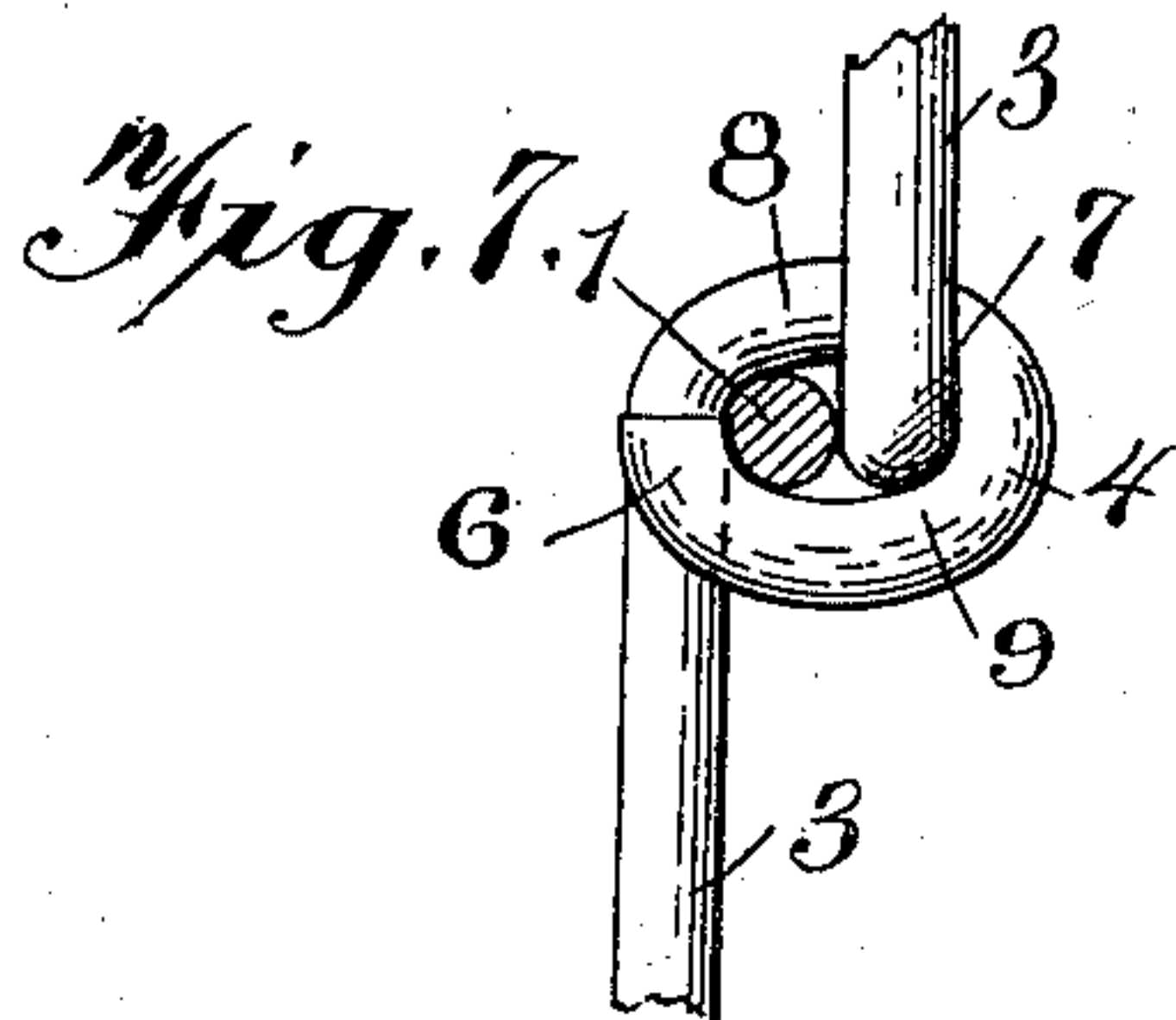
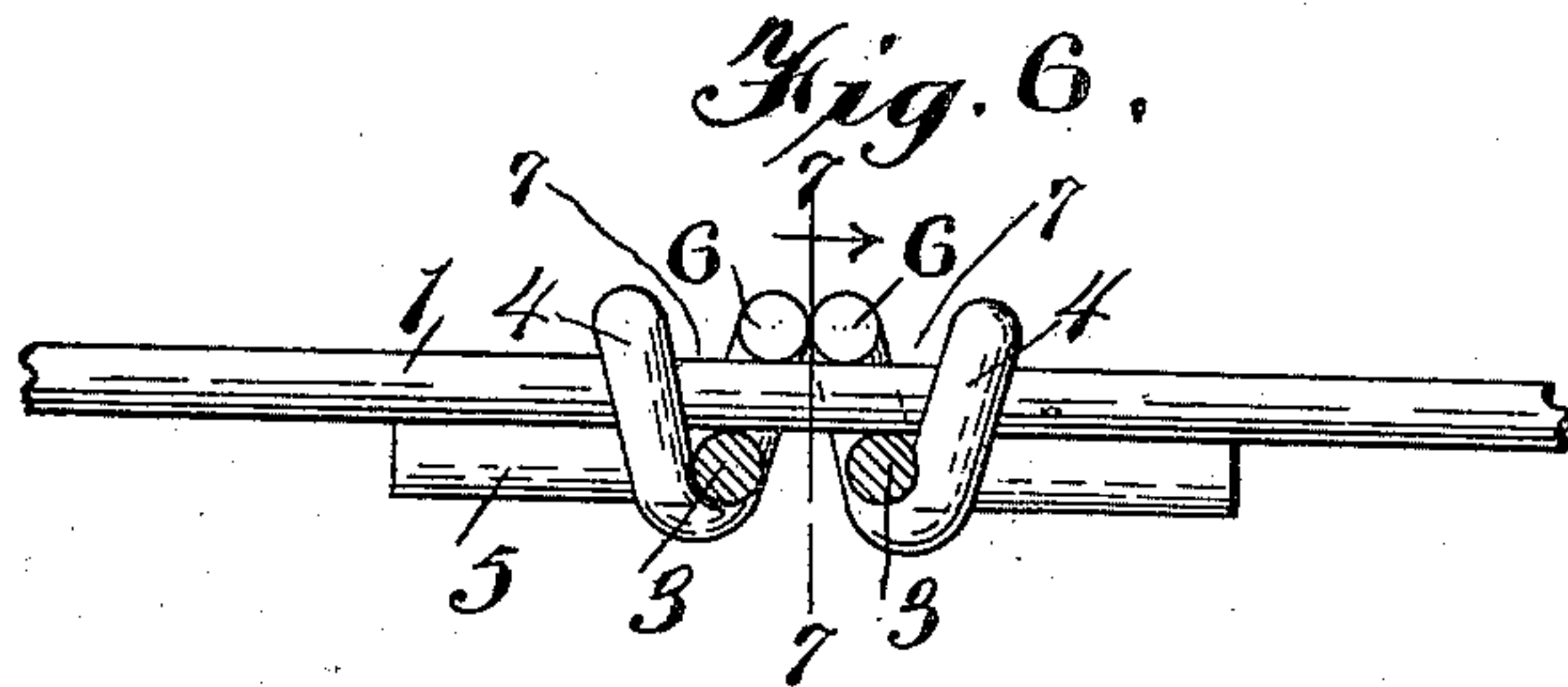
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2 Sheets—Sheet 2.



Witnesses

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UNITED STATES PATENT OFFICE.

CHARLES S. BEEBE, OF RACINE, WISCONSIN.

WIRE FENCE.

SPECIFICATION forming part of Letters Patent No. 706,883, dated August 12, 1902.

Application filed February 15, 1902. Serial No. 94,277. (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, county of Racine, 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.

This invention relates to certain improvements in wire fencing, and relates more particularly to improvements in wire pickets or stays for connecting, binding, or weaving together line-wires of a fence or the like.

An object of the invention is to provide improved simple, strong, and durable means for what might be termed "weaving" together the fence line-wires previously stretched and secured to the posts, which can be easily applied to and locked on the line-wires by hand without the necessity of employing special tools or fence-machines and avoiding the necessity of using factory-made wire fencing manufactured by machines.

Another object of the invention is to provide an improved wire-fence stay or picket for locking together the series of adjacent taut line-wires of a fence and which can be manufactured and sold ready for easy application by hand to line-wire fences and which is self-locking and will firmly and strongly lock together the line-wires of a fence and form a most firm and durable wire-fence fabric or structure whatever may be the irregular or hilly nature of the ground over which the wire fence extends.

A further object of the invention is to provide certain improvements in details of construction and in arrangements of parts whereby a highly-efficient and improved wire-fence stay will be produced.

The invention consists in certain novel features in construction, in arrangements, and in combinations of parts and details, as more fully and particularly pointed out and specified hereinafter.

Referring to the accompanying drawings, illustrating constructions merely as examples for purposes of explanation from among devices within the spirit and scope of this invention, Figure 1 shows in elevation a length

or panel of a line-wire fence having the wires locked together by devices within the spirit and scope of my invention. Fig. 2 is an enlarged detail elevation showing parts of the top and second line-wires and the double stay uniting them, the locking-loops of the next succeeding stays below showing. Fig. 3 is an enlarged elevation of a double bottom stay, showing means which can be employed for locking the lower ends of the bottom double stay to the bottom line-wire. Fig. 4 shows in enlarged detail elevation a detached separated pair of the right and left stays looking at the stays in a direction to show the entrance-opening into each locking eye or loop. Fig. 5 is a detail top plan of the gripping or locking eye or loop of one of the stays without showing the lateral lower end of the stay. Fig. 6 is a cross-sectional view on the line 6 6, Fig. 2, looking down. Fig. 7 is a section on the line 7 7, Fig. 6. Fig. 8 shows three elevations *a b c* indicating the method of laterally applying the locking-loop of a stay to a line-wire and upper stay *a* and then swinging the stay downwardly *b* to a position about as shown by *c* before the upper and lower cross-plies of the loop are firmly gripped by a continued movement of the stay to the left until the stay is bent and maintains the lock under spring-pressure, as shown in preceding views. Fig. 9 is a detail perspective of the locking-wire shown in other views, locking the lower end of the bottom stay to the bottom line-wire of the fence. Fig. 10 is a detail perspective view of the locking-wire of Fig. 9 locking the lower end of a stay to a line-wire. Fig. 11 is a sectional elevation taken on the line 11 11, Fig. 3. Fig. 12 is a detail elevation of the lock or fastening wire of Fig. 9.

In the drawings, 1 represents the line-wires stretched and secured to suitable posts in any usual or desirable manner. These wires are usually parallel, and any suitable number can be employed, according to the height of the fence, and the wires can be arranged a suitable distance apart. In practice the line-wires are usually arranged something like possibly three inches apart at the lower portion of the fence, with the width between the wires increasing upwardly, so that the upper line-wires may be something like nine inches apart. The line-wires can be provided with

or without the vertical deflections or crimps 2; but if wires with such deflections are employed it is preferable that the deflections be downward to form depressions in all the line-wires excepting the bottom wire and that the bottom wire have upward deflections or crimps, about as shown. However, my invention is applicable to the line-wires whether straight or crimped, and I do not wish to limit myself to the employment of the crimped line-wires. For instance, in Figs. 6, 8, and 10 straight line-wires are shown not formed with the crimps or deflections 2.

Each stay consists, preferably, of a stiff spring wire or rod 3, in length equal to the distance between two or more line-wires. These stays will be usually made to standards and put on the market as articles of manufacture ready for instant application to any line-wire fence. The stays will be made of different lengths to suit different conditions and different fences, so that stays of different sizes can be kept in stock. At one end each stay is formed with a gripping or locking eye or loop 4, formed when the stay is manufactured and ready for application and locking without further manipulation or bending of the wire by the use of tools. The opposite end 5 of the stay is usually bent laterally or at an angle, preferably about at right angles, to rest against and parallel with a line-wire to be locked thereto. The loop 4 is formed, preferably, by bending the wire or rod into a single coil or a single spiral convolution, usually somewhat elongated, so as to receive two wires side by side, and with the extremity 6 of the loop or convolution turned up beside the point where the wire is first bent laterally from the main or straight portion thereof and located a distance therefrom greater than the diameter of the line-wire. The locking or gripping eye or loop is hence what might be termed a "split ring," with the lateral entrance opening or passage 7 into the open center thereof. The plane of the locking eye or loop is at an angle or inclination to the plane of the length or axis of the straight portion of the stay—that is, the wire first extends about at right angles or laterally from the end of the body or length of the stay to form the upper or outer length or ply 8 of the loop, and from the outer extremity of the ply 8 the wire curves downwardly and is deflected laterally or to one side and is doubled back to form the inner, under, or return length or ply 9 of the loop to one side of the plane of the upper or outer ply 8, so that in plan the two plies form a V or angle about as shown in Fig. 5. The inner end of the inner or return ply 9 is then bent up beside and a distance from the main length of the stay to form the guard end 6 and the entrance-passage 7, hereinbefore referred to. The formation of the locking eye or loop is such that by holding the stay about in the position shown in *a*, Fig. 8, with respect to the line-wire and moving the stay laterally toward the line-wire

said wire will slip through the narrow entrance opening or passage 7 and into the loop. Then by swinging the stay downwardly (see *b*, Fig. 8) the guard end 6 will pass up between the line-wire, and the main length or stem of the stay will pass down also behind the line-wire, and thereby confine the loop on the wire. When the stay on its downward movement reaches the position shown in *c*, Fig. 8, the inner or under ply 9 of the loop will bear up against the line-wire and the upper ply 8 will bear down on the line-wire, and said two plies will occupy different vertical planes. When the stay reaches the position *c*, Fig. 8, it is ready to have the pressure applied for rigid locking and to maintain the lock. When the stay is in the position *c*, Fig. 8, the stem or length thereof is at an angle from the perpendicular, and its short lateral lower end is now beside and approximately parallel with the next line-wire. I preferably so arrange the gripping or locking loops that it is necessary in order to bring said lateral lower end of the stay to a point beside and parallel with the lower line-wire to exert considerable force or pressure on the stay, and hence spring and bend the same laterally (see Figs. 2 and 3) from its normal straight condition. This results in exerting great pressure and leverage on the locking or gripping loop, causing the opposite plies thereof to grip and bind with tremendous force in opposite directions against the line-wire, thereby most rigidly locking the stay to said line-wire and against movement on and longitudinally of the line-wire. The lower end of the stay is then rigidly locked to hold the stay under spring tension, maintaining the lock at its upper end. The end 5 of the stay is then locked to the line-wire while being held bent under tension by another locking loop or eye, such as before described. Usually the locking or gripping loop of another stay is slipped onto the stay-end 5 and the line-wire and locked, as before described, so as to rigidly grip and lock the end 5 to the line-wire against release. The end 5 of the stay usually projects laterally in the direction in which the stay-end tends to move to its normal straight condition, and hence the gripping-loop is located on the said end 5 in front of the stay-stem and in a position to firmly hold and lock the same. The stays are arranged in a vertical series in continuation of each other from line-wire to line-wire from the top to the bottom of the fence, although of course I do not wish to limit my invention to extending each series of stays throughout the entire height of the fence nor to the use thereof on fences composed entirely of line-wires, as often fences have a few line-wires and the balance of the fence filled in with close netting or fabric or other material.

Suitable means are provided to lock the lower end of the bottom stay. For instance, I show a gripping or locking loop or eye 10 of the same construction as hereinbefore de-

scribed, but provide the same with a short upwardly-projecting stem or shank 11. The loop 10 is formed to slip laterally onto the lower end 5 and the line-wire and embrace and rigidly grip and lock the same in the same manner as heretofore described in connection with the stay-gripping loop. The loop 10 and shank 11 are preferably formed of stiff spring-wire, and the loop 10 is rigidly gripped on the line-wire and end 5 by swinging the stem 11 upwardly toward the stem of the stay and then springing or forcing the same to or approximately to the stem of the stay and locking the same in such position either by a loop or binder 12, Figs. 3 and 11, or by forming the upper end of the stem 11 with a hook or catch 13 to catch and spring onto the stay, and thus hold the stem 11 against releasing movement and holding the same, maintaining the lock. The line-wires can be locked together by single stays or pickets, as shown on Sheet 2 of the drawings, or the stays can be arranged in pairs, as shown on Sheet 1 of the drawings, in which instance the stays of each pair lock by movement in opposite direction, and the stays of each pair are what might be termed "rights" and "lefts." (See Fig. 4.) The bottom locking-wires 10 11 will also be made in rights and lefts, as shown by Fig. 3, and the retaining loop or binder 12, before mentioned, can embrace the stems of the two locks to prevent accidental release thereof. The locks can be used with or without this binder, and if used the hooks or catches 13 might be dispensed with.

The waves or crimps in the line can be arranged in any suitable manner, and it is obvious that they form a most efficient aid in maintaining the stays in proper position and against displacement.

It is evident that various changes might be made in the forms, constructions, and arrangements of the parts described without departing from the spirit and scope of my invention. Hence I do not wish to limit myself to the constructions shown, but consider myself entitled to all such forms as fall within the spirit and scope of my invention.

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

1. A fence-stay consisting of a length of spring-wire having at one end portion an open coil whose axis is substantially transverse to the length of wire; the other end portion of the length being bent transversely to the main portion, and extending in a line substantially parallel with said axis.

2. A fence-stay consisting of a length of spring-wire having at one end portion an open coil inclosing a substantially elliptical bore, and whose axis is substantially transverse to the length of wire; the other end portion of the length being bent transversely to the main portion, and extending substantially parallel with said axis.

3. A fence-stay consisting of a length of

spring-wire having at one end portion an open coil inclosing a substantially elliptical bore with the major axis transverse to the length of wire and whose axis is substantially transverse to the length of wire; the other end portion of the length being bent transversely to the main portion, and extending substantially parallel with said axis.

4. A line-wire fence, and a vertical series of stays extending from wire to wire, the stays being each formed of a length of spring-wire having a coil at one end and the other end portion bent laterally at an angle; the coil of one stay embracing a line-wire and the lateral portion of this stay being alongside of an adjacent line-wire; the adjoining stay having its coil embracing said latter line-wire and adjacent transverse portion of the stay, and thereby locking them together; and means locking the transverse end of the last-mentioned stay to the next line-wire.

5. A line-wire fence, and a vertical series of stays extending from wire to wire, each stay formed of a length of stiff spring-wire having a gripping-eye at one end with a side passage, whereby the loop can be slipped onto a line-wire and the stay swung down to rigidly grip the line-wire, the opposite end of the stay formed with a lateral end, the stay being bent under tension with its said lateral end beside another line-wire, another stay having its gripping-loop embracing said lateral end and line-wire and rigidly locking them together, and means locking the lateral end of the last stay to a line-wire, substantially as described.

6. A fence having a series of line-wires, and a vertical series of stays, each stay extending from one line-wire to the next and locked thereto by gripping-loops, each stay having a gripping-loop at one end and being laterally bent at the opposite end, and a lock to secure the lateral end of the last stay to a line-wire, said lock comprising a stem at one end bent to form a locking-loop with a side passage, said loop locking the said lateral end and line-wire together, and the stem extending beside the stay, and means to lock the stem against releasing movement, substantially as described.

7. A fence comprising line-wires, and a vertical series of stays rigidly locking the line-wires together, the stays arranged in pairs between each pair of line-wires, the stays of each pair locking in opposite directions forming rights, and lefts, each stay bent to form a gripping-loop at one end and having its opposite end bent laterally and resting beside a line-wire and locked thereto by the loop of the next succeeding stay, substantially as described.

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

CHAS. S. BEEBE.

Witnesses:

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L. T. SMITH.