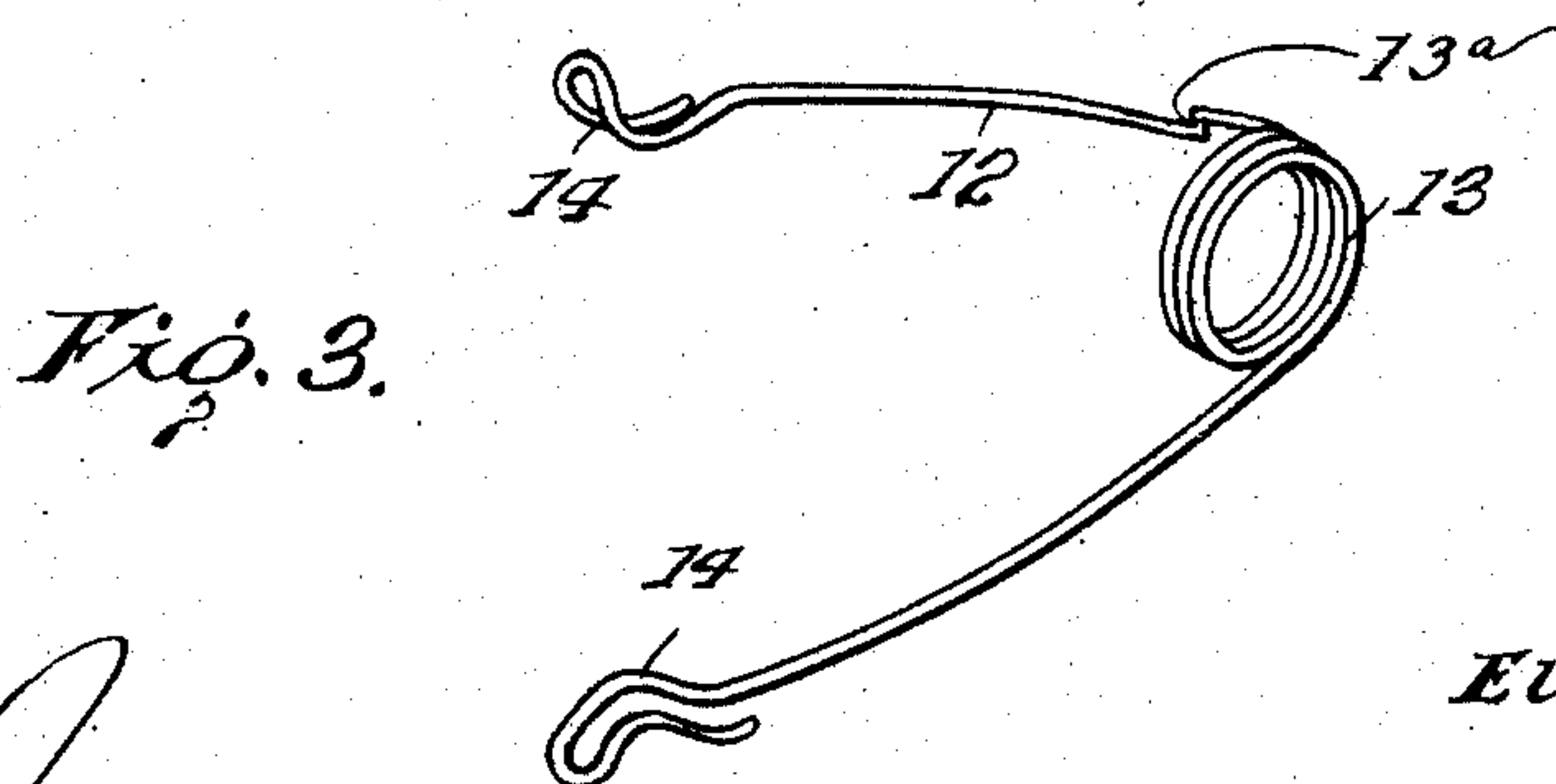
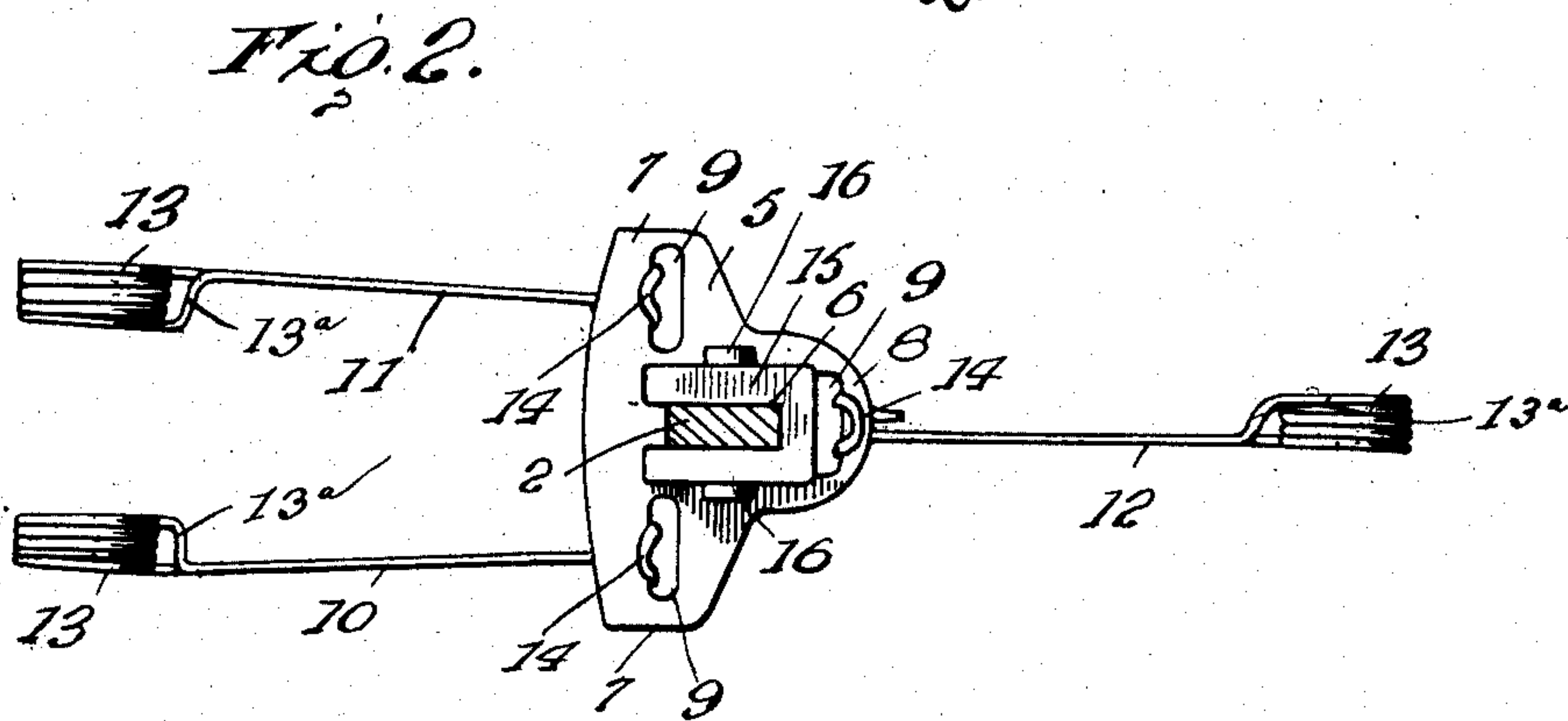
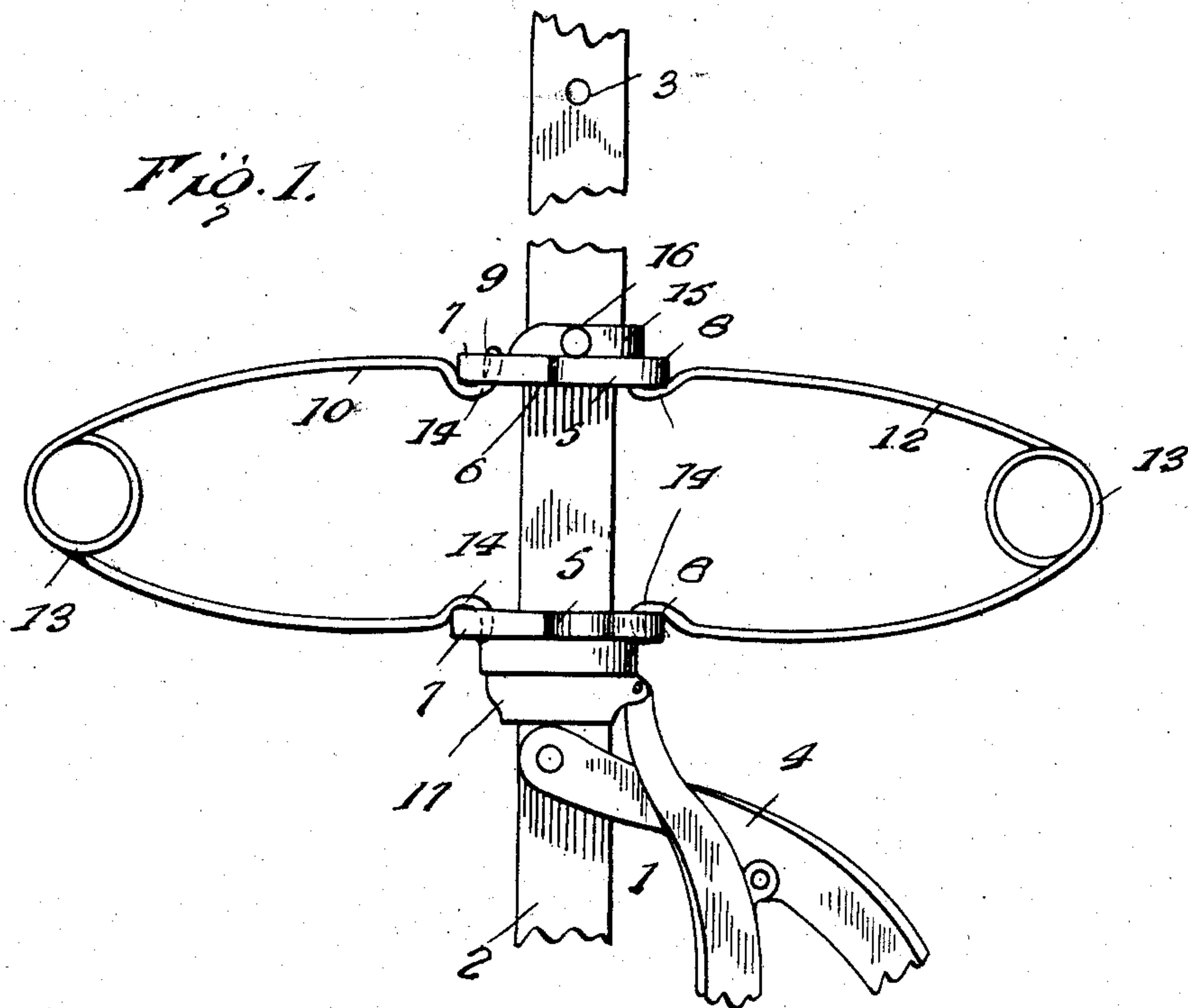


No. 864,146.

PATENTED AUG. 27, 1907.

E. ARCH.  
EQUALIZING DEVICE FOR PUMPS.  
APPLICATION FILED FEB. 20, 1906.



Witnesses

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By

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# UNITED STATES PATENT OFFICE.

ELIZABETH ARCH, OF COUNCIL BLUFFS, IOWA.

## EQUALIZING DEVICE FOR PUMPS.

No. 864,146.

Specification of Letters Patent.

Patented Aug. 27, 1907.

Application filed February 20, 1906. Serial No. 302,139.

*To all whom it may concern:*

Be it known that I, ELIZABETH ARCH, a citizen of the United States, residing at Council Bluffs, in the county of Pottawattamie and State of Iowa, have invented certain new and useful Improvements in Equalizing Devices for Pumps, of which the following is a specification.

The object of my invention is to provide an equalizing device arranged for ready attachment to a pump rod, and designed to assist in moving the pump rod upwardly or downwardly as the case may be, in the position in which it is lifting water, so as to equalize pressure on the pump rod and avoid some of the exertion which would otherwise be necessary if the pump be actuated by hand.

The invention consists essentially of an improved equalizing device, comprising an upper and a lower bracket provided with slots to receive the pump rod, the upper bracket being arranged for attachment to the pump rod at different heights, as desired, and the lower bracket being designed to rest upon the frame or some stationary part of the pump, and springs arranged to be detachably secured to the respective brackets and tending to force the same apart so as to assist the movement of the pump rod in one direction.

For a full description of the invention and the merits thereof and also to acquire a knowledge of the details of construction of the means for effecting the result, reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a side elevation of my improved equalizing attachment for pumps. Fig. 2 is a top plan view thereof. Fig. 3 is a detail perspective view of one of the springs employed.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

Referring to the drawings, the numeral 1 indicates the casing of a pump of any desired construction or design, 2 designates the pump rod, which in the present instance is of a greater length than it would otherwise be without my invention, in order to accommodate the device of my invention, said rod being provided if desired with a cross head 3 to which a wind-mill rod or similar device may be attached to actuate the pump, and 4 designates the handle of the pump fulcrumed in any desired manner on the casing thereof and pivotally connected to the pump rod 2. By this arrangement the pump may be actuated either by mechanical means or by hand. The upper and the lower brackets 5, which may be formed of one piece castings or the like, are each provided with a slot 6 by which they are mounted upon the pump rod 2, one above the other. Each bracket 5 is provided with two oppositely extending arms 7 and an arm 8 intermediate of the arms 7 extending from the bracket at right angles to the

arms 7. In each of said arms there is formed an opening 9, and the corresponding openings in the two brackets are arranged in vertical alinement with each other as shown. Springs, in the present instance three in number and designated 10, 11, and 12, are each provided with intermediate coils 13 and with their ends returned upon themselves and laterally and outwardly bent to form upwardly and downwardly facing hooks 14, and the said hooks are designed to be engaged in the respective arms of the two brackets by being inserted in the apertures thereof, as illustrated. The tension of the springs is to spread the two brackets apart.

The peculiar formation of the hooks 14 at the extremities of the springs aforesaid is advantageous as the form of these hooks positively positions the springs with reference to the brackets with which they engage. In other words, by bending the extremities of the springs laterally, and curving the bent extremities downwardly and upwardly, the hooks 14 are broadened considerably. It will be observed that the openings 9 in the brackets 8, are elongated and that the width of the hooks 14, by reason of the recurved formation thereof, is greater than that of the narrower portions of said openings 9. Thus in the actual use of the invention, the normal tendency of the springs 10, 11 and 12 will be to extend from the brackets 8 as shown in the drawings and should the same be forced to one side, the breadth of the hooks 14 will cause the sides of these hooks to engage the opposite sides of the openings 9, whereby the springs will be thrown back into the original positions thereof, or in such positions that the breadth or wider portions of the hooks are in alinement with the elongated openings 9. The springs are not likely therefore to interfere with one another and the spring 12 particularly is not likely to assume a position in which its tension will not equalize with reference to the tension of the other two springs and likelihood of binding of either of the brackets 8 with reference to the pump rod, is effectively eliminated.

The upper bracket is provided at one or both sides with an extension 15 in which a set screw 16 works, said set screw being designed to impinge against the sides of the pump rod 2 so as to rigidly hold said bracket thereon at different desired elevations. The lowermost bracket is intended to rest upon some stationary part of the pump casing, preferably upon the upper bearing 17 for the pump rod.

From the foregoing description in connection with the accompanying drawings, it is manifest that when the pump rod is depressed it will compress the springs 10, 11, and 12, and that thereupon the lifting operation of the pump rod, to lift the volume of water, will be assisted by the expansive force of said springs, and the operation of pumping, if it be performed by hand,



will be thus materially assisted. As the equalizing device of my invention is not in the way of the mechanical pumping device, said equalizing device may remain on the pump rod at all times so as to be in  
5 readiness for use whenever the pump is actuated by hand.

It is obvious that the uppermost bracket may be secured to the pump rod at different elevations as may be desired, and that the springs 10, 11, and 12  
10 may be of varying lengths and of different resilient strengths. As the upper bracket is secured to the pump rod and the lower bracket rests upon some stationary part of the pump casing, the device in addition to its function as an equalizing attachment, will  
15 also serve as a means for preventing the rod from dropping down the casing, thereby avoiding all the trouble which would otherwise ensue from this cause.

As each of the springs 10, 11 and 12 are detachably mounted as before described, in the brackets, any  
20 one or more of them may be detached whenever it is desired to apply the device to a pump that does not require all of the springs.

As illustrated best in Figs. 2 and 3, it will be seen that each of the said springs 10, 11 and 12 has its two  
25 arms that emanate from the coil 13, one directly above or in vertical alinement with the other, this construction being produced by an offset 13<sup>a</sup> in one of the spring members, and with the hook portion 14 so constructed by turning the extremities of the springs in  
30 opposite directions to produce the broadened hook and then bending the double portions slightly up-

wardly and slightly downwardly. By this arrangement the springs will work more effectively in the vertically alined openings of the respective brackets.

Having thus described the invention what is claimed 35 as new is:

In an equalizing device for pumps, the combination of a pump casing, a pump rod mounted within the casing and projecting above the same, a lower bracket loosely mounted upon the pump rod and designed to rest upon the casing, 40 an upper bracket provided with an opening through which the pump rod extends and carrying a U-shape extension embracing the pump rod, a set screw carried by the extension and designed to engage the pump rod to lock the upper bracket in a fixed position, each of the said brackets being 45 provided at one end with oppositely extending lateral arms formed with longitudinally disposed elongated apertures and at the opposite end with a longitudinally extending arm disposed at approximately right angles to the before mentioned lateral arms and formed with an elongated aperture 50 arranged approximately parallel to the apertures in the lateral arms, the corresponding apertures in the two brackets being in vertical alinement with each other, and a series of springs interposed between the two brackets, each of said springs consisting of a coiled portion and a 55 pair of arms emanating from the coil, one of said arms being offset adjacent the coil to throw the two arms in the same vertical plane, the extremities of the arms being bent laterally in opposite directions and then returned upon themselves to form hooks designed to engage the elongated 60 apertures and to cooperate with the same to prevent any swinging movement of the springs.

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

ELIZABETH ARCH. [L. S.]

Witnesses:

Mrs. A. BOURICIUS,  
C. P. LANHAM.