

J. O. BANE.  
PUMP SPRING CONNECTION.  
(Application filed May 13, 1902.)

(No Model.)

Fig. I.

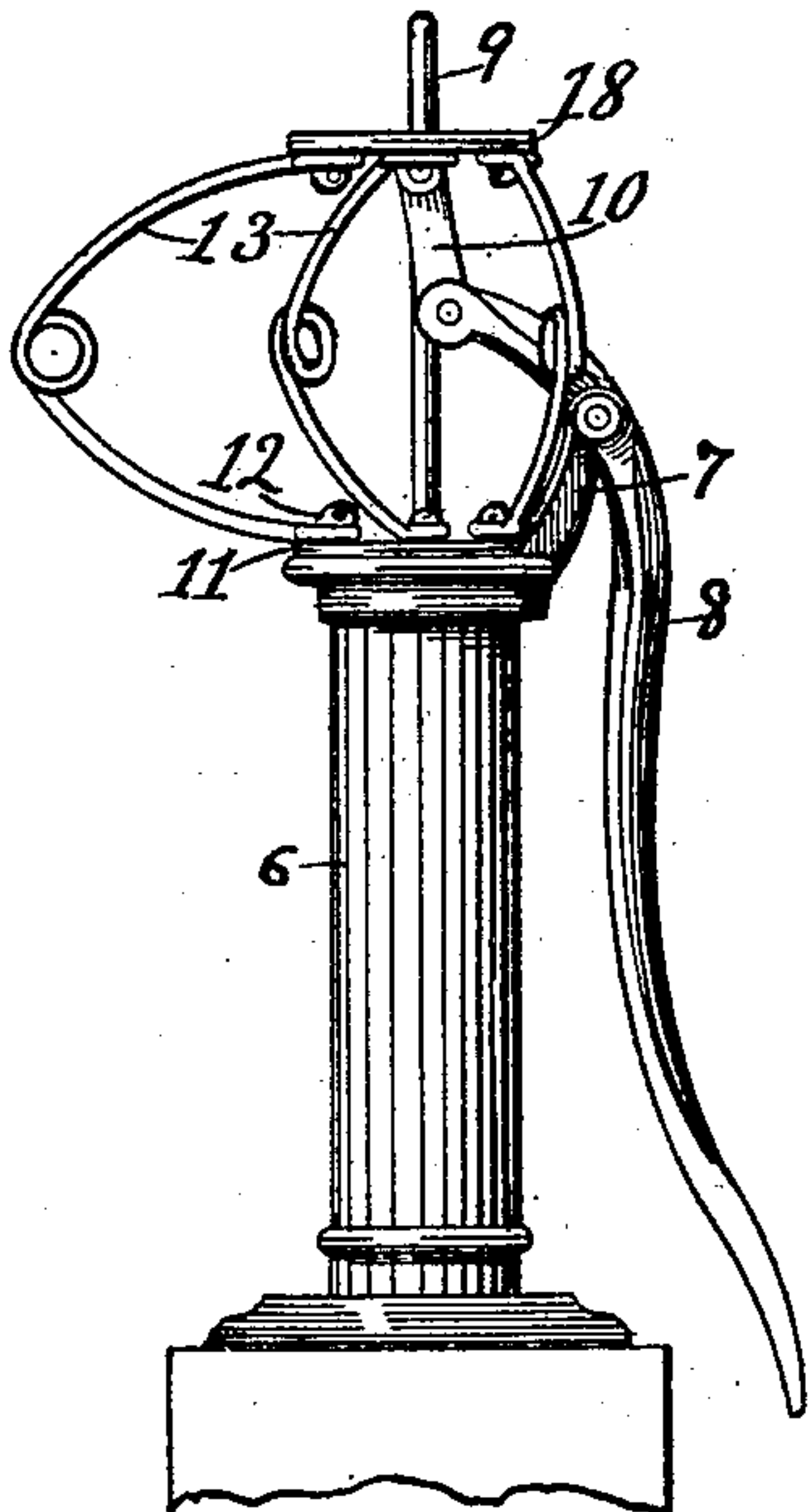


Fig. II.

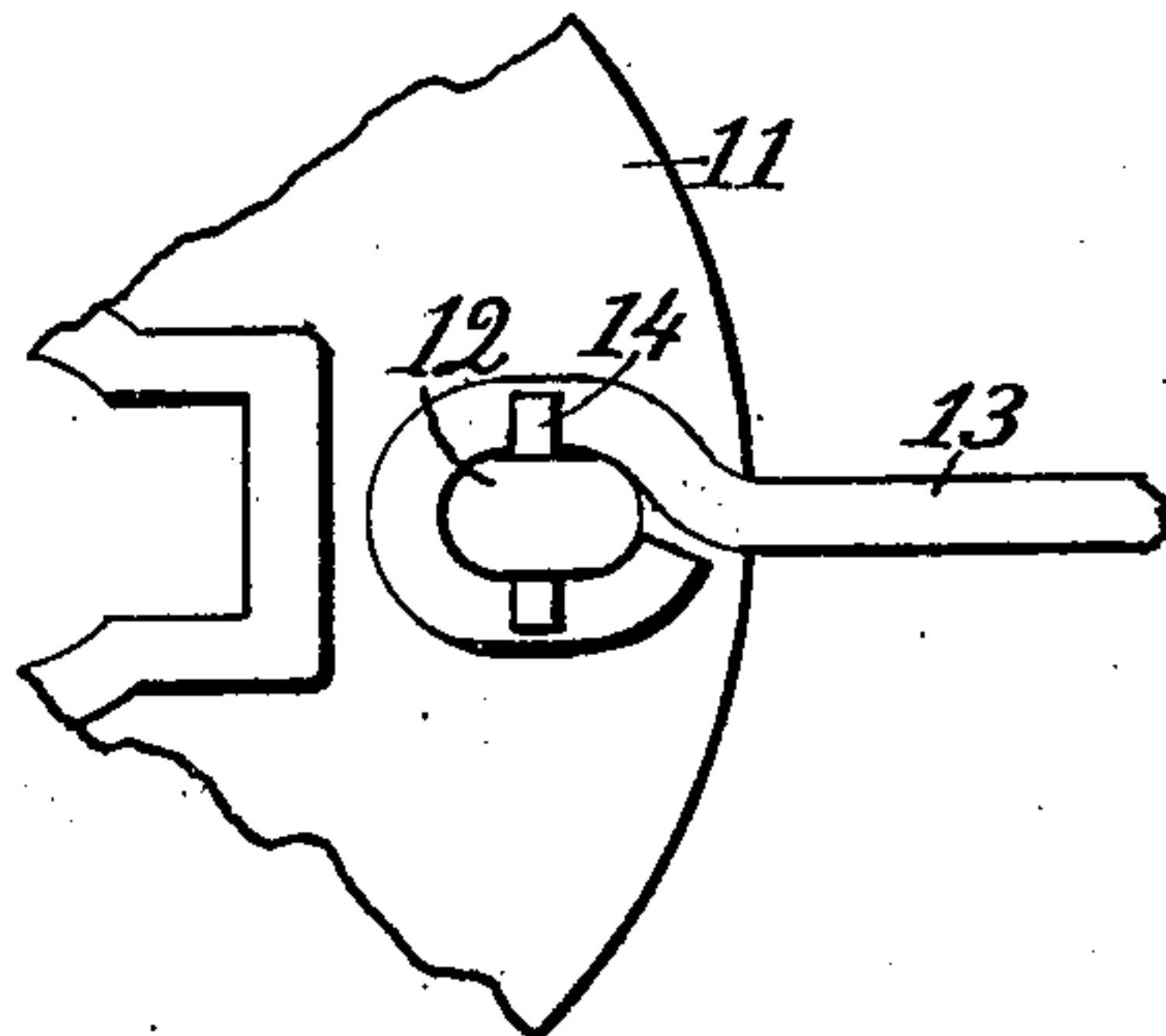


Fig. III.

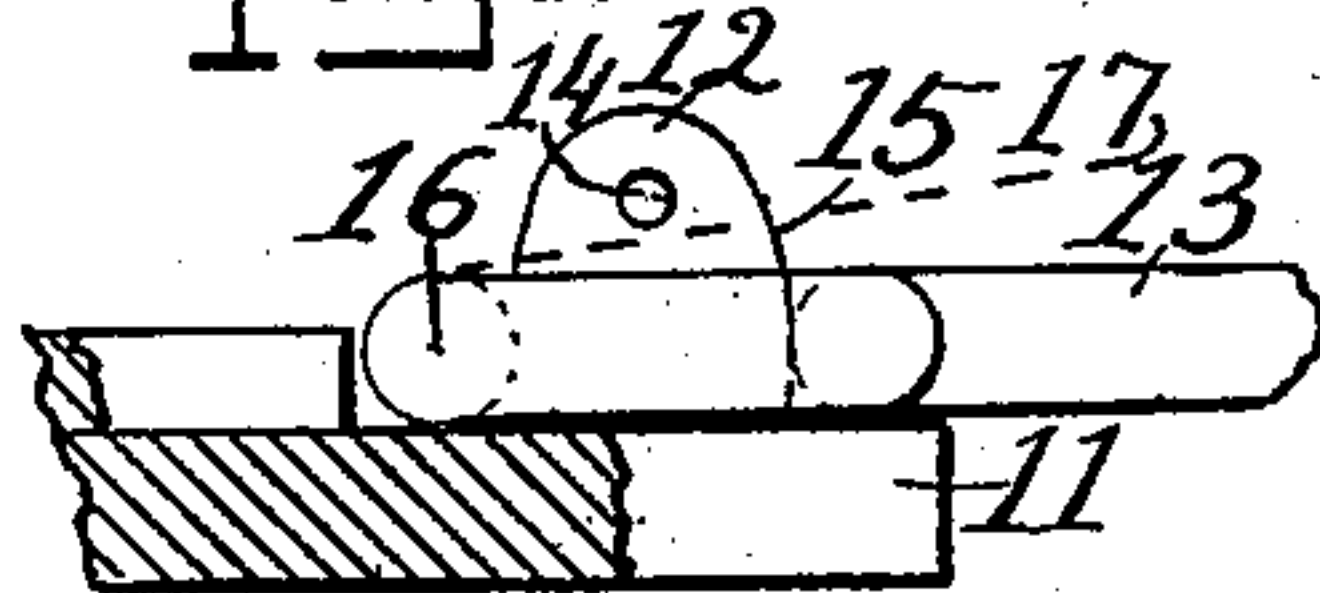


Fig. IV.

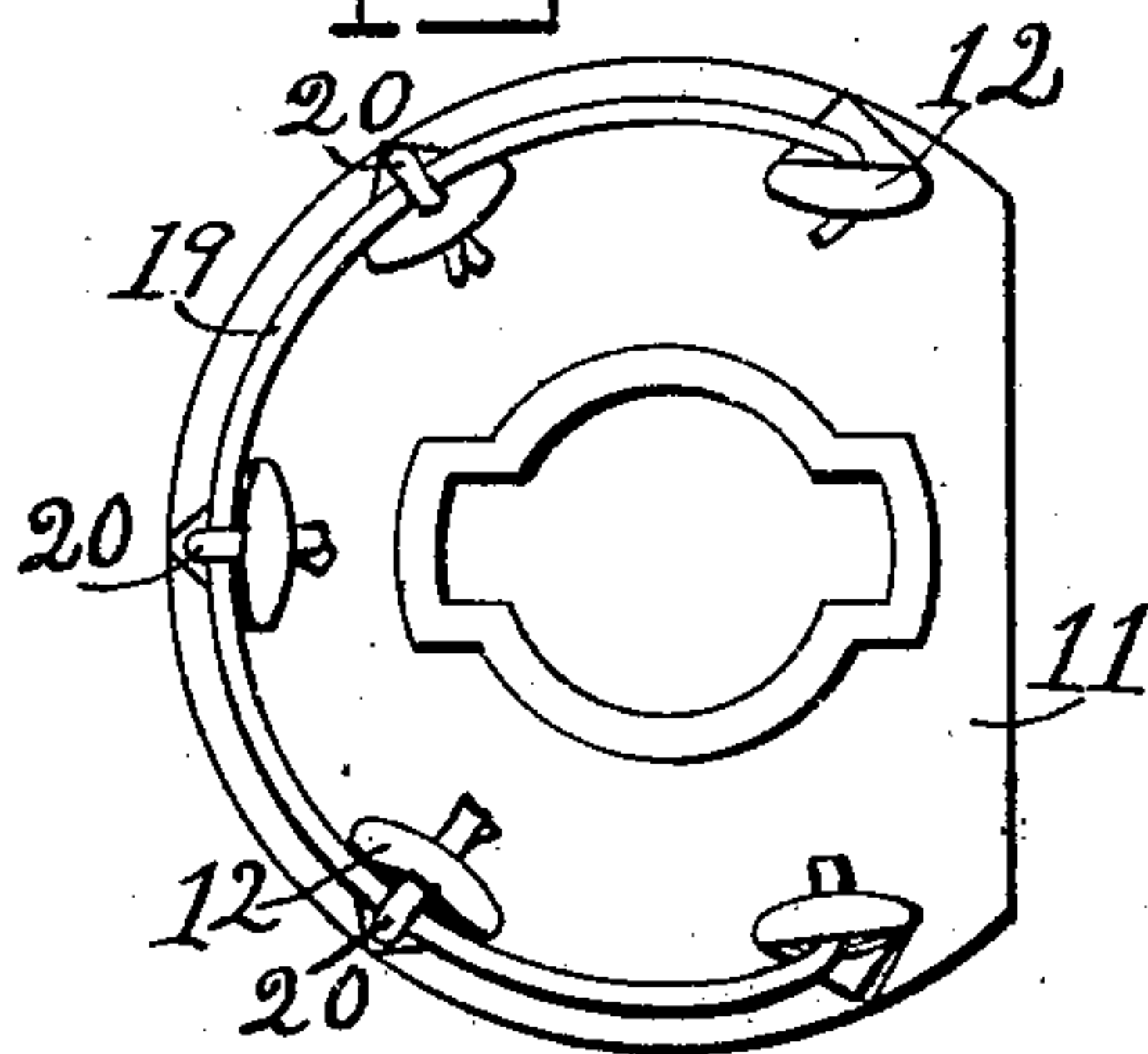


Fig. V.

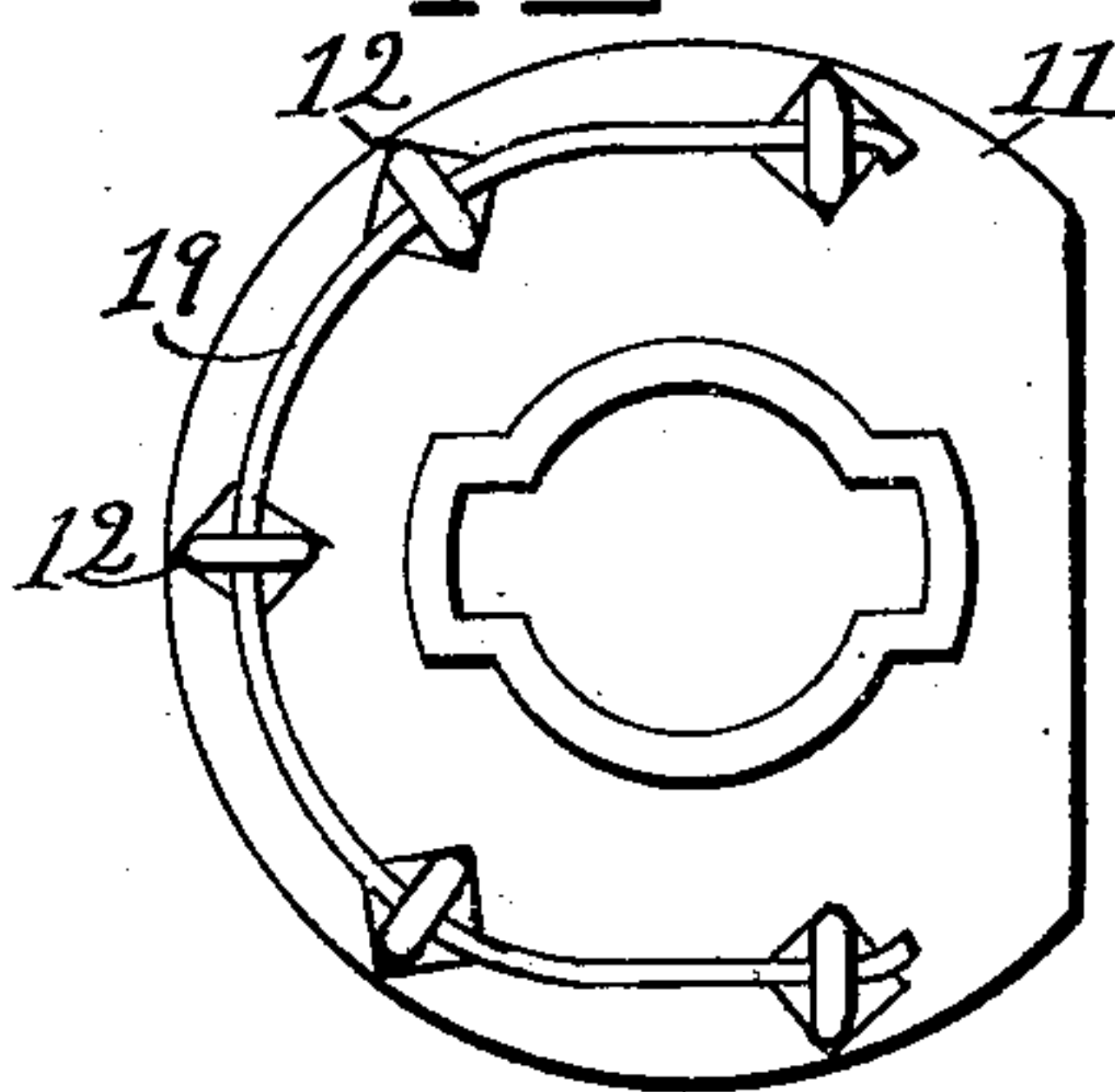


Fig. VI.

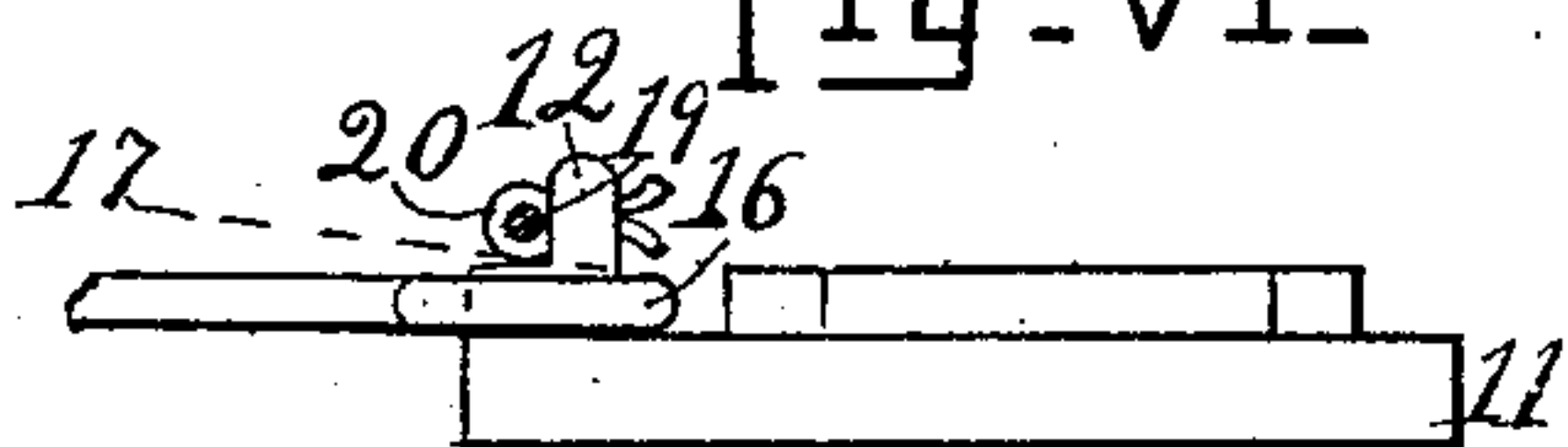
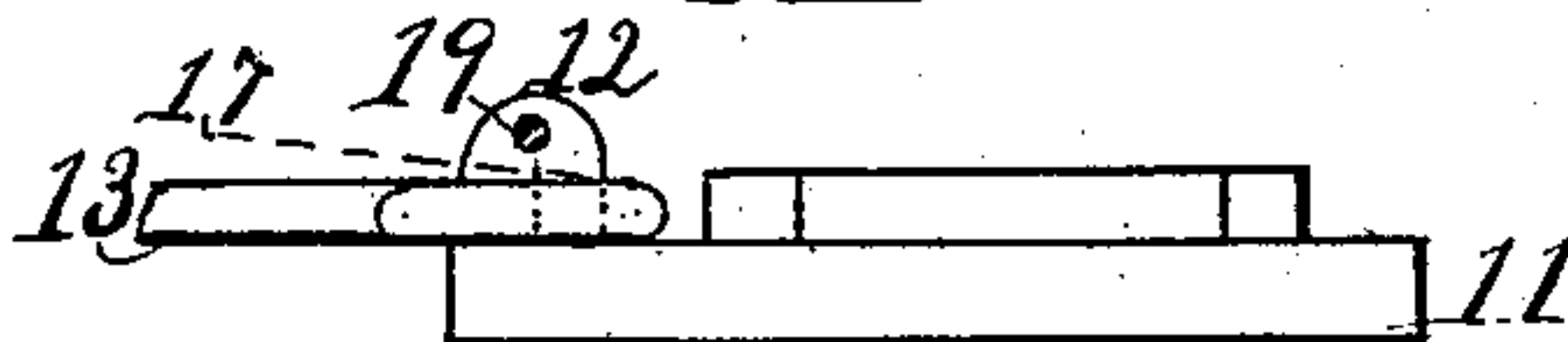


Fig. VII.



Witnesses  
A. E. Waller.  
N. Waller.

by

Inventor  
James O. Bane.  
W. S. Stevens.  
Attorney

# UNITED STATES PATENT OFFICE.

JAMES O. BANE, OF WASECA, MINNESOTA.

## PUMP-SPRING CONNECTION.

SPECIFICATION forming part of Letters Patent No. 706,149, dated August 5, 1902.

Application filed May 13, 1902. Serial No. 107,085. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES O. BANE, a citizen of the United States, residing at Waseca, in the county of Waseca and State of Minnesota, have invented a new and useful Improvement in Pump-Spring Connections; and I do hereby declare the following to be a full, clear, and exact description of the same.

This invention relates to that class of pumps in which springs are used to balance the weight of the pump-rod, boxes, &c., and its object is to provide simple and reliable means for securely supporting the ends of the springs in such a manner that the springs will not hop off from the fastenings nor become broken.

To this end my invention consists in the construction and combination of parts forming a pump, hereinafter more fully described, and particularly pointed out in the claim, reference being had to the accompanying drawings, in which—

Figure I represents a pump according to my invention in side elevation. Fig. II is a plan view of one of the spring base-plates and a portion of a spring attached. Fig. III is an edgewise view of the same plate and portion of a spring. Figs. IV and V are plan views of the plate, showing modified forms of the spring connections. Fig. VI is an edgewise view of the modification shown in Fig. IV, and Fig. VII is an edgewise view of the modification shown in Fig. V.

Numeral 6 represents the body of a pump provided with a bracket-top 7, to which the pump lever or handle 8 is pivoted.

9 represents the piston-rod, and 10 a pitman connecting the rod and handle.

11 is a plate located on top of the body 6 and provided with studs 12, upon each of which one end of a spring 13 is looped and through which is a hole for a retaining-pin 14.

The object of the springs is to balance or a little more than balance the weight of the piston-rod, so as to render the work of pumping easier, and the lifting capacity of the springs may be graded to suit various conditions. The U-shaped spring is the only one at present under consideration.

In using springs of this kind two objections are met with. First, there is a tendency of these springs to hop off from their base-fas-

tenings, and, secondly, the springs are likely to be broken in service if they are held in any rigid manner at their ends. I have therefore shaped the studs 12 so that a hole may be drilled crosswise through each to receive a retaining-pin 14 at a little distance above the spring, and I have shaped the outer face 16 of the stud as an arc of a circle whose center is at 16, near the base of its opposite side. Furthermore I shape the spring so that it will always rest on its toe under the center 16, whether the spring be in its compressed or extended condition. By this means the swinging of each arm of a spring when at work is upon the toe as a fulcrum and around the point 16 as a center, the dotted line 17 showing the upper limit of its path of motion and the retaining-pin 14 being located just beyond this limit. The normal position of the spring is its upward limit near the line 17, and when it begins to be compressed in operation it slides against the face 15 of the stud, and that face being the arc of a circle from the center 16 it permits the spring to swing either downward or upward without resistance, whereas if this face of the stud were in a straight line, either vertical or at any angle, it would interfere with the free movement of the spring one way or the other and have a tendency to break either the stud or spring. The pin 14 is located just beyond the path of the spring, so as not to be sheared off by either the direct action of the spring or by the kicking movement from the rebound of the spring that would result if more space were given for the spring to kick.

The advantages of this invention are in the direction of securing permanent and reliable springs to aid in the operation of pumping. It is to be understood that the top plate 18 is secured to the piston-rod and may be provided with the same style of studs as those above described, the plate being inverted to receive the upper ends of the springs. It is also to be understood that the separate pins 14 may be substituted by a ring-pin 19, secured to the studs in any usual manner, as by passing directly through them, as in Figs. V and VII, or as by split eye-pins 20, as in Figs. IV and VI. Circular studs would not keep the springs from turning sidewise out of place, but quarter-round studs, such as are shown



in Fig. IV, or square studs, as in Fig. V, or studs out of round horizontally in any direction would serve the purpose, so I use the words "out of round" in the claim to express  
5 this characteristic.

Having thus fully described my invention, what I believe to be new, and desire to secure by Letters Patent, is the following:

10 In a pump, a stationary body; a reciprocating piston-rod; a spring base-plate supported on the body and another spring base-plate secured to the piston-rod; the said base-plates having studs projecting from their adjacent faces, each of the said studs being out

of round and having its outer face shaped as 15 an arc of a circle from a center located near the base of the opposite side of the stud; a series of U-shaped springs provided each with an open loop at its end shaped to engage one of the said studs, and a pin removably located in the stud just beyond the path of the spring, substantially as described. 20

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

JAMES O. BANE.

Witnesses:

JOHN NOONAN,  
EDNA LEARY.