

J. D. BENSON.  
SUCKER VALVE.  
APPLICATION FILED MAR. 24, 1911.

999,737.

Patented Aug. 8, 1911.

FIG. 1.

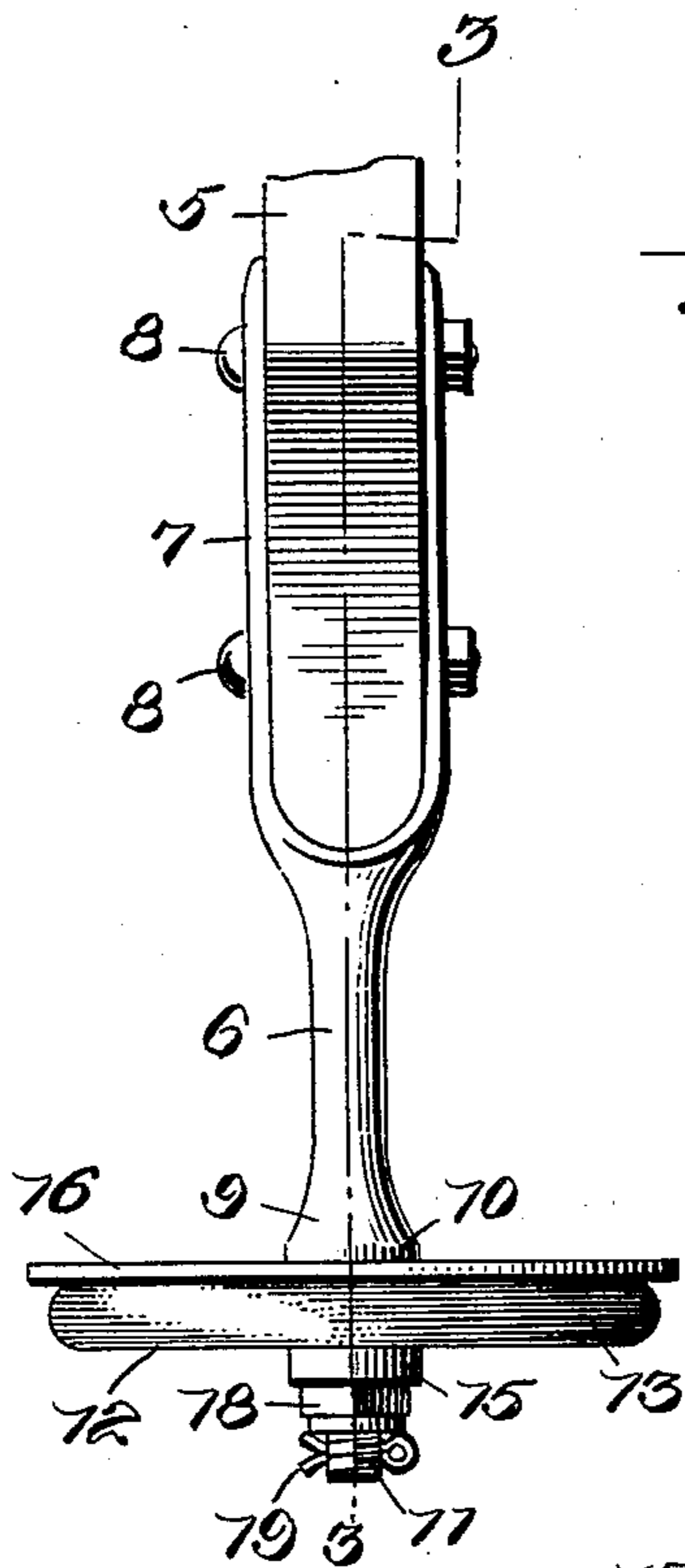


FIG. 3.

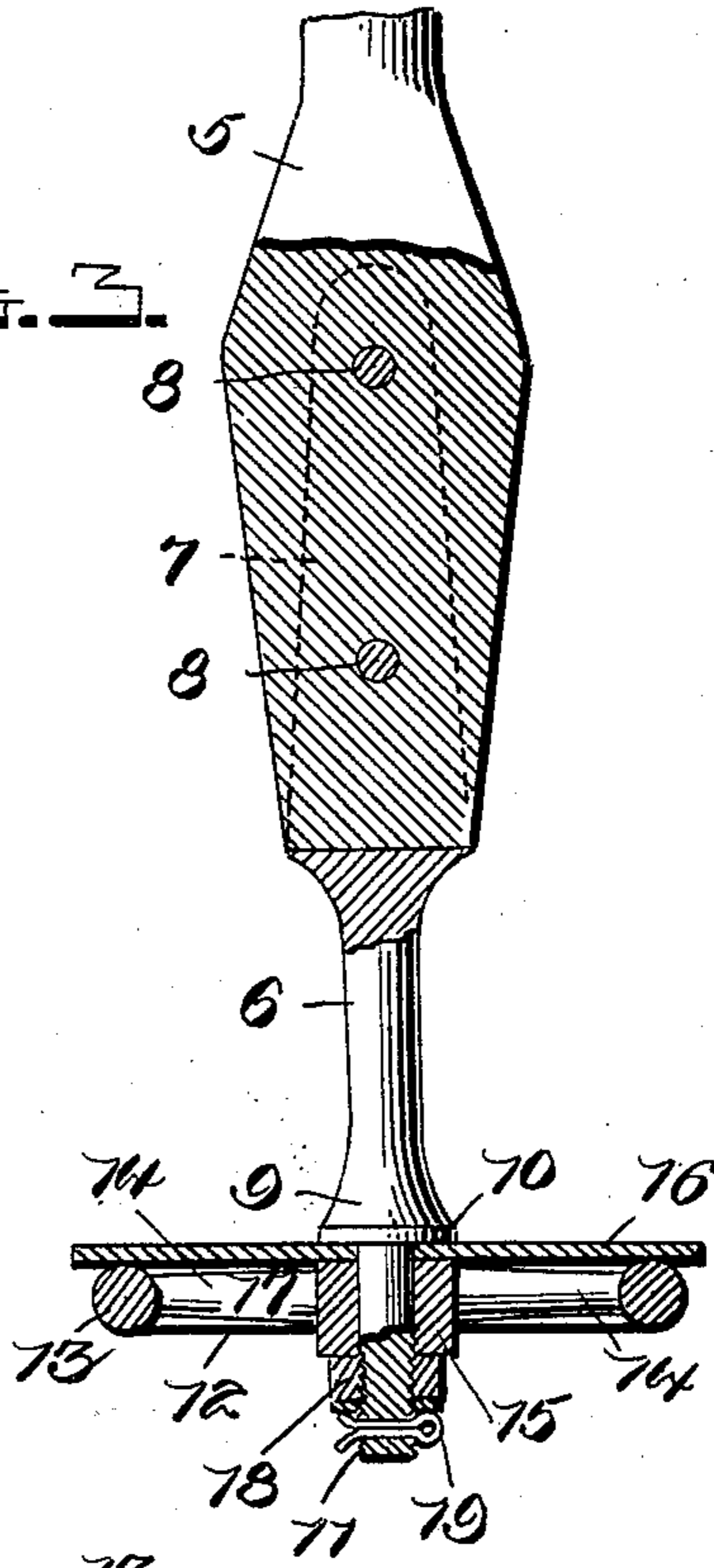
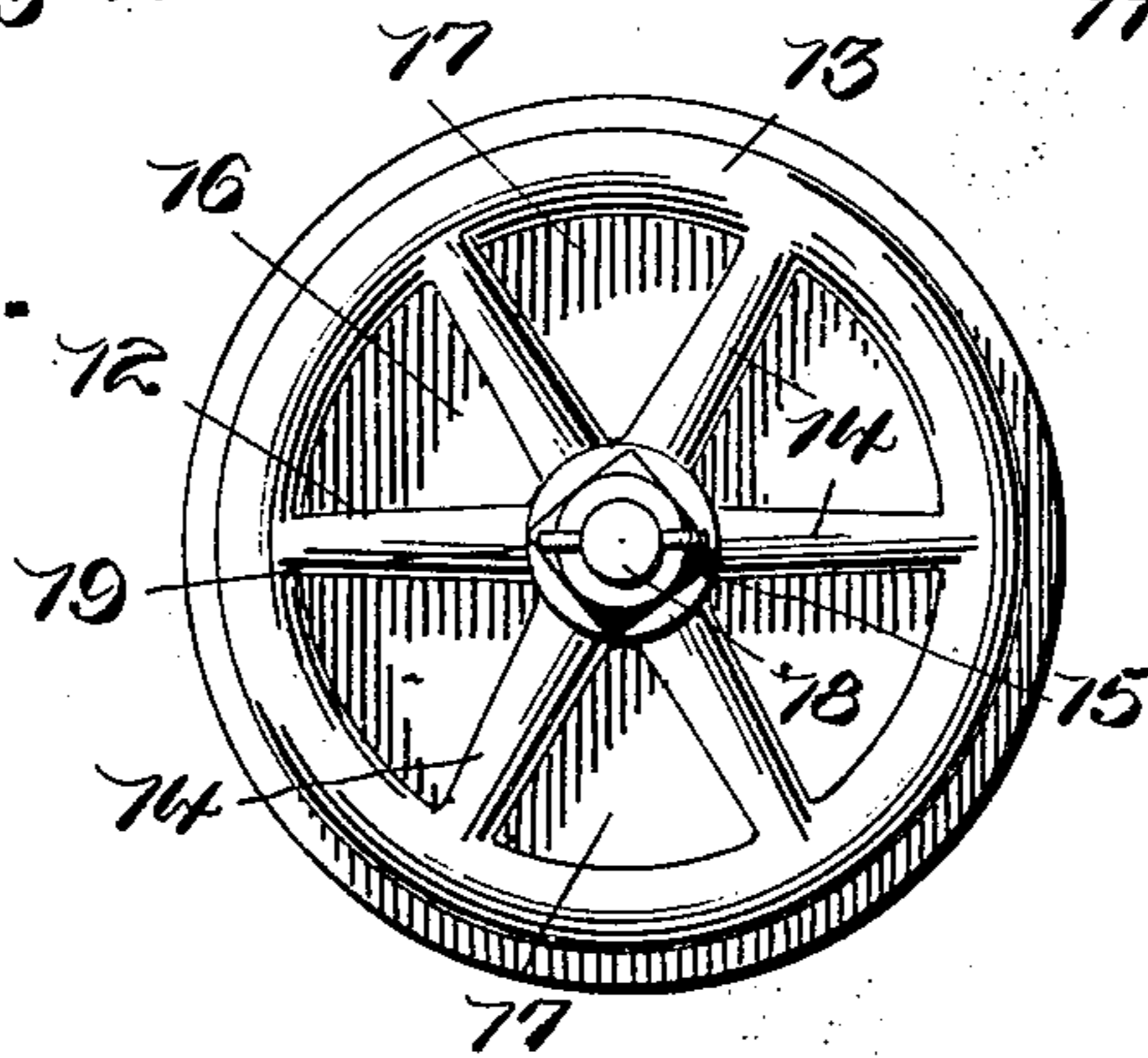


FIG. 2.



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Witnesses

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# UNITED STATES PATENT OFFICE.

JOHN D. BENSON, OF CHESAPEAKE CITY, MARYLAND.

SUCKER-VALVE.

999,737.

Specification of Letters Patent.

Patented Aug. 8, 1911.

Application filed March 24, 1911. Serial No. 616,588.

*To all whom it may concern:*

Be it known that I, JOHN D. BENSON, a citizen of the United States, residing at Chesapeake City, in the county of Cecil and State of Maryland, have invented certain new and useful Improvements in Sucker-Valves, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to improvements in sucker valves for well pumps, and has for its primary object to provide a valve of this character which is of extremely simple construction, and which may be readily assembled or disassembled whereby the flexible valve plate can be easily and quickly replaced when the same becomes worn and unfit for further use.

A further object of the invention is to provide a sucker valve for pumps of increased efficiency, and one which is comparatively durable in construction and may at all times be kept in thorough repair at small cost.

With the above and other objects in view, the invention consists of the novel features of construction, combination and arrangement of parts hereinafter fully described and claimed, and illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of a pump valve embodying my improvements; Fig. 2 is a bottom plan view thereof; and Fig. 3 is a section taken on the line 3—3 of Fig. 1.

Referring in detail to the drawing 5 designates the plunger rod which reciprocates vertically in the pump barrel in the usual manner. To the lower end of the pump rod, the valve stem 6 is secured, said stem being integrally formed upon the intermediate portion of a U-shaped attaching plate 7 which is rigidly fixed to the end of the plunger rod by means of suitable fastening bolts or rivets 8. Adjacent to its lower end the valve stem 6 is provided with a conical enlargement 9 which forms an annular shoulder 10 thereon. The lower end of the stem is screw threaded as indicated at 11.

The body member 12 of the valve proper consists of a ring or annulus 13 of circular form in cross section which is integrally connected by means of a plurality of radial arms 14 to a central cylindrical hub 15, said body member being in the form of the common hand wheel as used upon the ordinary globe valve. The hub 15 is provided with

a cylindrical bore to receive the lower end of the valve stem 6. Between this body member and the annular shoulder 10 of the stem the flexible valve plate 16 is arranged on the lower reduced end of the stem and covers the spaces 17 between the radial bars 14 of the body member. This flexible valve plate projects beyond the periphery of the body member 12 and is disposed concentrically with relation thereto, the edge of the flexible plate being adapted for frictional engagement with the inner wall of the pump barrel. The valve plate 16 is adapted to engage closely upon the annular shoulder 10, and after the body member 12 has been arranged upon the valve stem, a nut 18 is threaded upon the lower end 11 of said stem and adjusted into engagement with the hub 15 of the body member to securely hold said member and the valve plate between itself and the annular shoulder 10. The valve stem is provided with a transverse opening to receive a cotter pin or key 19 to securely retain the nut 18 on the stem.

From the above it is believed that the construction and operation of my improved sucker valve will be readily understood. The valve operates in the usual manner of such pump valves, the downward movement of the pump rod causing the water to impinge upon the under side of the flexible valve plate 16 and flow through the openings between the arms 14 of the member 12. Upon the upward movement of the pump rod this water is expelled through the outlet of the pump barrel. It will be noted that by providing the ring 13, the valve plate engages a very limited portion of its convex surface, thus materially reducing the wear upon said plate.

The main advantage which is possessed by my device over the common form of sucker valve resides in the fact that the body member 12 and the valve plate may be readily removed when said valve plate becomes worn to such an extent that it is no longer serviceable so that a new valve plate may be readily placed in position and rigidly fixed to the end of the valve stem. Owing to the fact that these flexible plates may be easily and quickly removed, they may be formed of leather or other fibrous material which is less expensive than the sole leather usually employed in such valves and they can also be made considerably thinner. The time required to replace the worn valve plate is

negligible. As my improved valve is extremely simple in construction, it will be obvious that the same can be manufactured at an extremely low cost. The body member  
5 12 would preferably be of cast iron, or it will be understood that this member, the stem and the attaching plates may be formed of any desired material.

Numerous other minor modifications may  
10 be resorted to without departing from the essential feature or sacrificing any of the advantages of the invention.

Having thus described the invention what is claimed is:—

15 A sucker valve for well pumps comprising a valve stem having attaching plates formed on one end to be secured to a pump rod, the lower end of said valve stem being reduced in diameter, a circular flexible valve plate  
20 arranged on the reduced end of the stem, said stem having a central portion gradually increasing in diameter to provide an annular shoulder thereon forming a comparatively extensive bearing surface for the cen-

tral portion of said flexible valve plate, a 25  
body member consisting of a ring of circular form in cross section, a hub portion and a plurality of radial arms connecting said ring and hub portion, said body member being loosely disposed on the reduced portion 30  
of the valve stem beneath said valve plate, said valve plate being of greater diameter than the ring of said body member and bearing upon the convex surface thereof at a point adjacent to its outer edge, a nut 35  
having threaded engagement on the reduced end of the valve stem to engage the hub portion of said body member and rigidly secure the central portion of the flexible valve plate  
between the shoulder on the valve stem and 40  
the said hub, and a retaining key for said nut disposed through the valve stem.

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

JOHN D. BENSON.

Witnesses:

M. C. LYDDANE,

E. L. WHITE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,  
Washington, D. C."