

T. BUTLER.

PUMP.

APPLICATION FILED SEPT. 15, 1905.

Fig. 1.

Fig. 2.

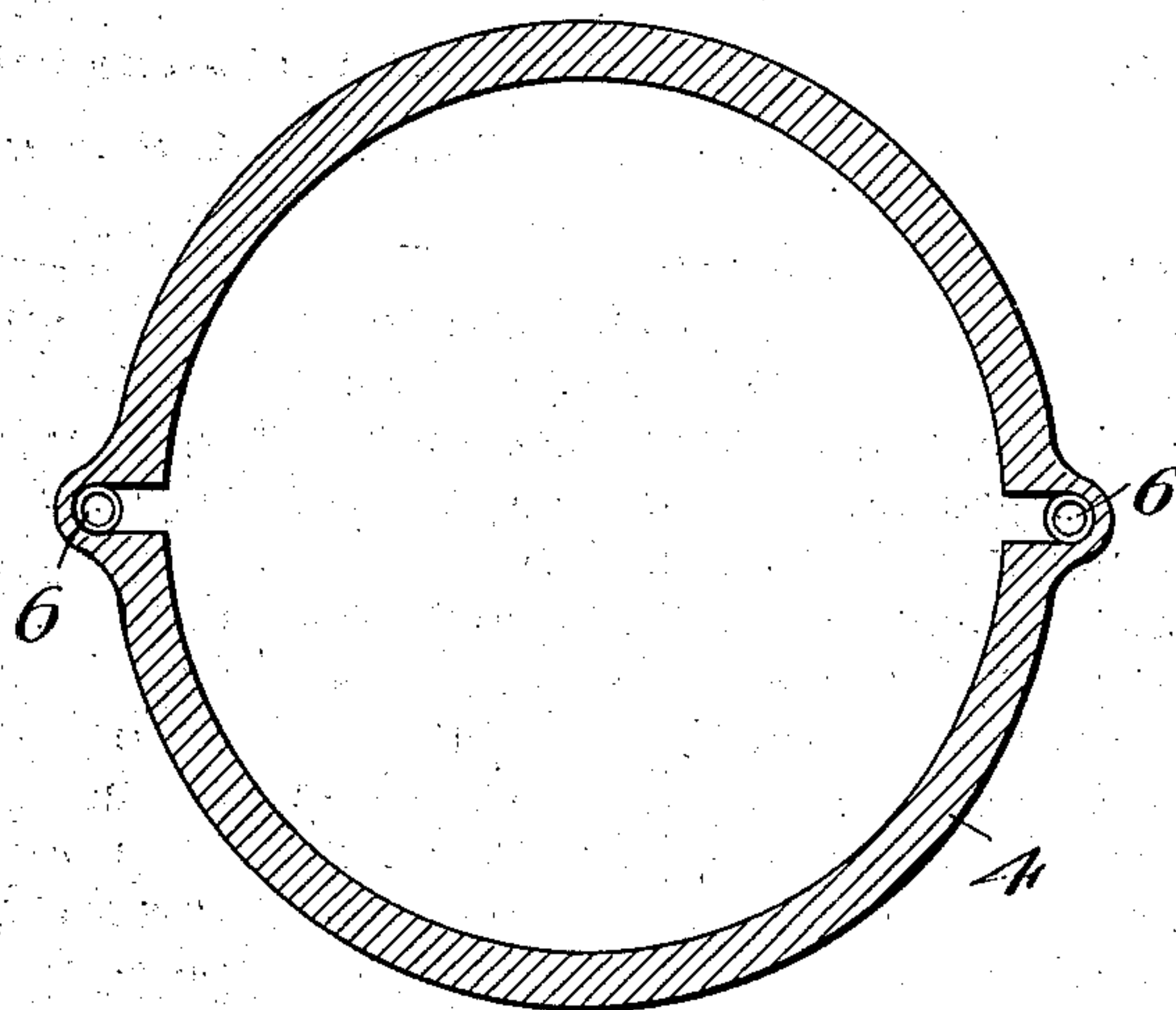
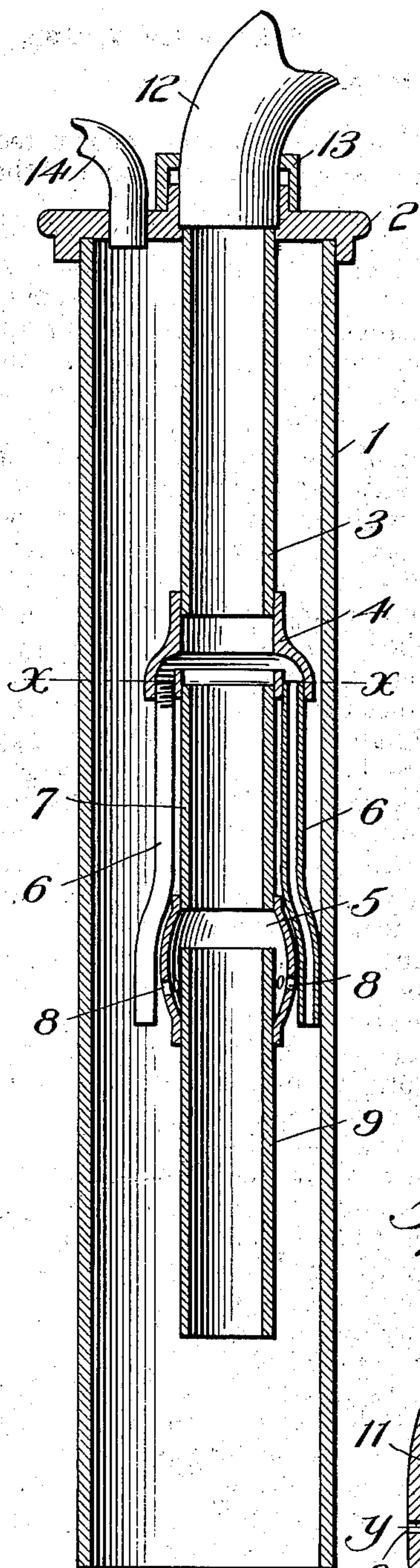


Fig. 3.

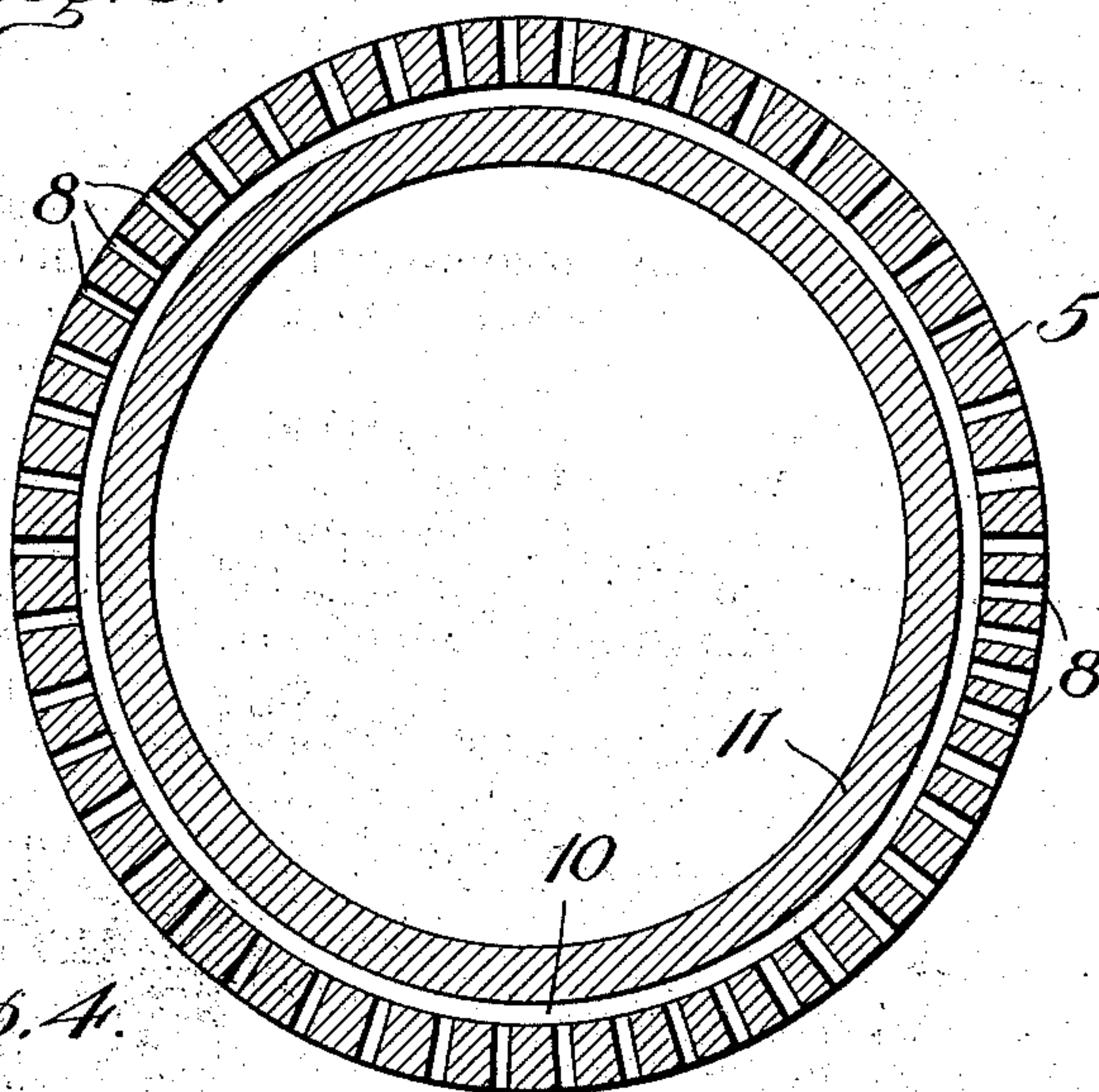
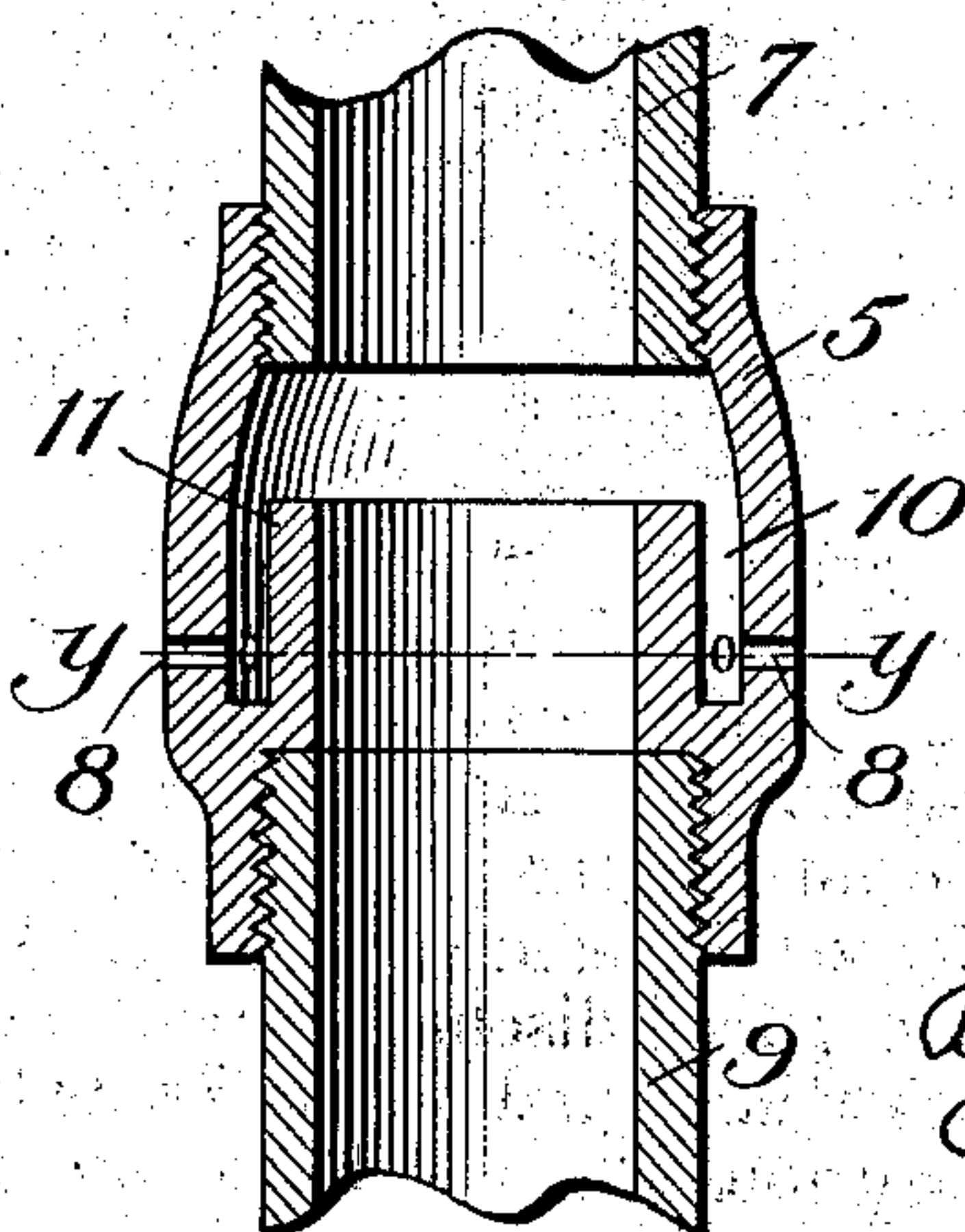


Fig. 4.



Witnesses:

J. W. Stitt,
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UNITED STATES PATENT OFFICE.

THOMAS BUTLER, OF FORT WORTH, TEXAS.

PUMP.

No. 840,430.

Specification of Letters Patent.

Patented Jan. 1, 1907.

Application filed September 15, 1905. Serial No. 278,628.

To all whom it may concern:

Be it known that I, THOMAS BUTLER, a citizen of the United States, residing at Fort Worth, Texas, have invented certain new and useful Improvements in Pumps, of which the following is a specification.

My invention relates to pumps, and particularly to pumps for deep wells, and the object is to provide apparatus for pumping oil, water, sand, and other articles from deep wells; and the invention consists of certain improvements on the Letters Patent No. 660,946, issued to me on October 30, 1900, for apparatus for pumping water, sand, &c.

The present invention consists of certain improvements in the ejectors.

Other objects and advantages will be fully explained in the following description, and the invention will be more particularly pointed out in the claim.

Reference is had to the accompanying drawings, which form a part of this application and specification.

Figure 1 is a vertical section of the casing, the discharge-pipe, and the ejectors. Fig. 2 is an enlarged horizontal section of the upper ejector, taken along the line *x x* of Fig. 1. Fig. 3 is an enlarged horizontal section of the second ejector or lower ejector, taken along the line *y y* of Fig. 4. Fig. 4 is a vertical section of the lower ejector, Figs. 3 and 4 showing a slight variation from the ejector shown in Fig. 1.

This invention is provided with a casing 1 and a cap 2, screwed thereon. A discharge-pipe 3 also connects with the cap 2. The discharge-pipe 3 is intercepted by ejectors 5 and 4. The ejector 4 consists of a casting having an enlargement or boss on each side thereof and a threaded opening through each boss to receive the small ejector-pipe 6. The ejector 4 is screwed on the pipe 3, and section 7 of the discharge-pipe is screwed into the ejector 4. The ejector 5 consists of a casting screwed on the pipe 7. This ejector has a series of small openings 8 to receive air. The lower part of the ejector 5 may be threaded interiorly and the discharge-pipe section 9 screwed into the ejector. If the ejector is constructed as shown in Fig. 1, the part of the pipe 9 which projects up within the ejector should be smooth and without

threads. This ejector may be constructed as shown in Figs. 3 and 4. This form of the ejector contains an annular recess 10 within the interior part thereof, and an annular interior flange 11 projects upwardly some distance higher up than the series of air-openings 8. The flange 11 will deflect the air upwardly, so that the intruding air will not interfere with the flow of water through the discharge-pipe. In the form shown in Fig. 1 the upper part of the pipe 9 would perform this service. A suitable service-pipe 12 may be connected with the cover 2, and a packing-gland 13 may be provided for the pipe 12. A pipe 14 may be connected to any suitable air-compressor for forcing air into the casing 1 above the water.

The drawings do not indicate the dimensions of the pipes for deep wells. If the water is approximately one hundred feet from the surface, the lower ejector should be approximately five hundred feet below the surface, and the upper ejector should be about one hundred feet above the lower ejector. The pipe-section 9 should reach approximately forty feet below the lower ejector. Should the pipe 9 terminate too close to the air-inlets 8, the pressure on the surface of the water might cause the air in great quantities to enter the mouth of the pipe and cause the water to be thrown out with too great force and would be dangerous.

In operation the pressure of the air on the surface of the water forces the water up the discharge-pipe, beginning with section 9. I have provided two auxiliary air-lifts in the ejectors 4 and 5. The air entering the apertures 8 aids in forcing the water upward, and the air entering the small pipes 6 also aids in forcing the water upward. This invention has been demonstrated to be highly efficient, and pumps equipped with the herein-described apparatus are in daily use.

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

A water-pumping apparatus having a water-tight casing, a discharge-pipe entering said casing, a lower ejector intercepting said discharge-pipe and provided with air-inlets and means for deflecting the air from said inlets upward, an upper ejector intercepting

said discharge-pipe and having bosses on the outside thereof and small air-inlet pipes entering said ejector through said bosses, said air-inlet pipes extending below the air-inlets of the lower ejector, and a pipe entering said casing for admitting compressed air.

In testimony whereof I set my hand, in the

presence of two witnesses, this 5th day of September, 1905.

THOMAS BUTLER.

Witnesses:

A. L. JACKSON,
J. W. STITT.