

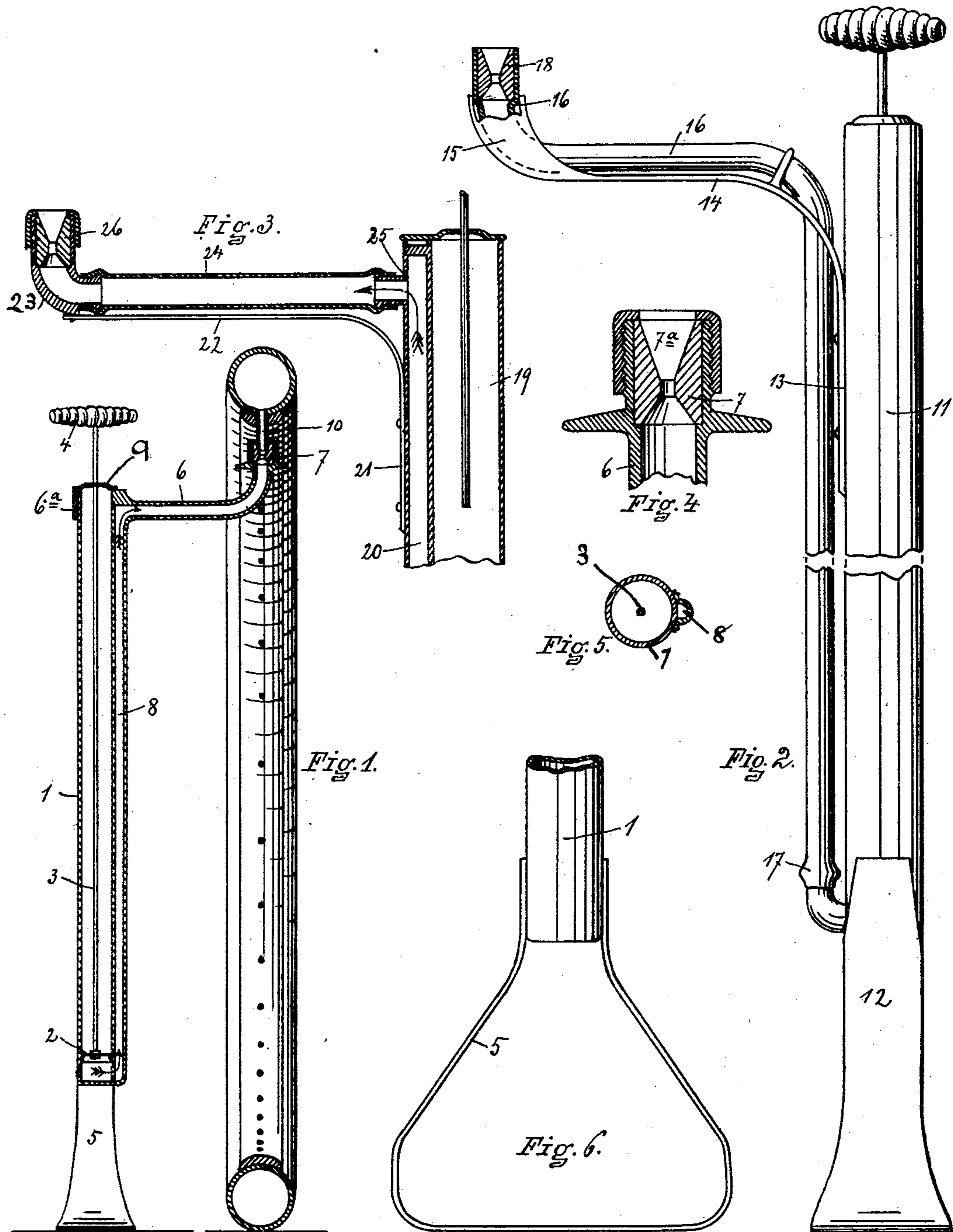
No. 703,010.

Patented June 24, 1902.

DE WANE B. SMITH.
BICYCLE PUMP.

(Application filed May 11, 1899.)

(No Model.)



WITNESSES.
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BICYCLE-PUMP.

SPECIFICATION forming part of Letters Patent No. 703,010, dated June 24, 1902.

Application filed May 11, 1899. Serial No. 716,355. (No model.)

To all whom it may concern:

Be it known that I, DE WANE B. SMITH, of Deerfield, in the county of Oneida and State of New York, have invented certain new and useful Improvements in Bicycle-Pumps; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

The object of my present invention is to provide an improved bicycle-pump which is simple in construction and new and novel in the method of its use and withal a convenient and desirable construction.

In the drawings, Figure 1 shows a vertical section of my improved bicycle-pump in connection with a bicycle-wheel to which it is applied, which is also shown in cross-section. Fig. 2 shows, on an enlarged scale, a modified form of construction. Fig. 3 shows in vertical section details of another form of construction. Fig. 4 shows in section a form of cushioned coupling or tire connection which may be used in the construction. Fig. 5 shows a cross-section of the barrel or cylinder of the pump shown in Fig. 1 in connection with an air-passage constructed along the side of the barrel. Fig. 6 shows, on a scale equal to that shown in Fig. 2, the lower or base end of the barrel in connection with the pump foot or stirrup.

Referring to the reference-figures in a more particular description, 1 indicates the cylinder or barrel of the pump, which is provided with a plunger-head 2 and a plunger-rod 3, having a handle 4. At the foot the cylinder or barrel 1 is provided with a pump foot or stirrup 5. At the upper end of the cylinder or barrel there is attached a laterally-projecting tube 6, having an upwardly-turned end with an elastic bushing or cushioned tire connection 7 arranged therein. The elastic bushing 7 is of the form of construction shown in detail in Fig. 4, having a somewhat-conical opening 7^a, adapted to receive the hose-coupling of an ordinary bicycle-tire. The laterally-projecting tube 6 is connected by an air-passage 8 with an opening in the lower end of

the barrel 1. This form of construction might be modified to make a double-acting pump by arranging an opening in the barrel at the upper end substantially opposite the tube 6 and providing the usual valves for double-acting pump. As shown in Fig. 1, the tube 6 is a portion of a small casting having a ring portion 6^a, which surrounds the upper end of the barrel. There is also provided at the upper end of the barrel a cap or cover 9, having an opening through which the plunger-rod 3 passes. The total length of the pump from the bottom of the foot 5 to the cushioned tire connection is preferably nearly equal to that of the diameter of the bicycle-wheel with which the pump is intended for use.

The operation of this pump is substantially as follows: The usual screw-cap being removed from the bicycle-nipple 10, the wheel is rotated to bring the nipple into the highest position. The pump is then brought into a position so that the nipple 10, or rather the hose-coupling fixture on the end of the nipple, engages with the cushion on the end of the tube 6. The wheel and pump may then be tilted, if necessary, so that the weight of the wheel on the nipple 10 will force the same down well onto the cushioned tire connection. The plunger is then operated, forcing the air through the air-passage 8 and the tube 6 into the tire.

It will be noted that the cushion connection does not surround or grip the tire-nipple, but the connection is maintained by continuous weight or pressure at the cushion connection.

In the modified form of construction shown in Fig. 2 there is provided the usual barrel 11, with the foot or stirrup 12. Adjacent to the upper end of the barrel I secure at 13 a spring 14, which projects laterally from the barrel and has an eye 15 formed in its projecting end. In connection with this spring I employ a rubber tube 16, which is connected to the lower end of the barrel at 17 and extends up the barrel until it passes out on the upper side of the spring 14 through the eye 15, and in the projecting end of the tube 1 I locate an elastic bushing or cushion tire connection 18, similar to 7, heretofore described.

In the modified form of construction shown in Fig. 3 there is provided the barrel 19, with the usual plunger and rod and having an air-

passage 20 communicating with the lower end of the barrel, similar to the construction shown in Fig. 1. To the upper end of the pump I attach at 21 a spring 22, which projects laterally from the upper end of the pump, and secured on its outer end a device 23 in the nature of a pipe-elbow. One end of the elbow 23 is connected by a flexible tube 24 with a nipple 25, secured on the upper end of the pump and connecting with the passage 20. In the upwardly-opening end of the elbow 23 I provide the elastic bushing or cushion tire connection 26, similar to 7, heretofore described.

The mode of operation of the two modified forms of construction described are not materially different from that of the construction shown in Fig. 1. It may, however, be noted that the springs employed are of sufficient resisting power to hold the cushion firmly against the pressure of the air being forced into the tire, that the springs will also permit a yielding or movement of the tire-connection cushion in following up the tire-nipple, as it may change its position with the inflation of the tire or for other reasons, and the springs will also compensate for various variations in sizes and conditions of wheels and the tire-nipples, as well as adjust itself in the hands of an unskilled or careless user, and the springs will also prevent injury to the tire-nipple by reason of too much force being applied thereto either from carelessness or otherwise.

It is evident that many other modifications and changes may be made without departing from the spirit of my invention.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination in a bicycle-pump of a cylinder, a foot or stirrup at the lower end of the cylinder, a plunger and operating-handle at the upper end of the cylinder, and a tube projecting laterally from the upper portion

of the pump having an upwardly-opening end and a cushion tire connection held and supported by said projecting tube, substantially as set forth.

2. The combination with a portable bicycle-pump having a foot stirrup or rest at its lower end, of an upwardly-opening cushion tire connection supported by the pump and arranged to operate substantially as set forth.

3. The combination with a cylinder bicycle-pump having a stirrup at its lower end and a plunger of a tube connected with the cylinder and having an upwardly-opening end located out of the axial line of the cylinder and provided with a cushion tire connection, and means for supporting said tire connection with continuous pressure in engagement with a bicycle-tire nipple or other object to be inflated, substantially as set forth.

4. The combination with a bicycle-pump having a cylinder and plunger of a foot adapted to support the pump, and an upwardly-opening tube connected with the cylinder and provided with a cushion tire connection, and means for supporting the cushion connection in resisting pressure applied from above to the cushion connection, substantially as set forth.

5. A bicycle-pump comprising a cylinder and a piston member, a base to which one of said members is secured, and an air-discharge pipe leading from the cylinder member having upwardly-turned valve-engaging end fixed relative to and above the base in a position to be engaged with the downwardly-extending nipple of a tire turned into a position where the nipple will depend from the wheel top.

In witness whereof I have affixed my signature, in presence of two witnesses, this 8th day of May, 1899.

DE WANE B. SMITH.

Witnesses:

SARAH A. BROWN,
E. WILLARD JONES.