

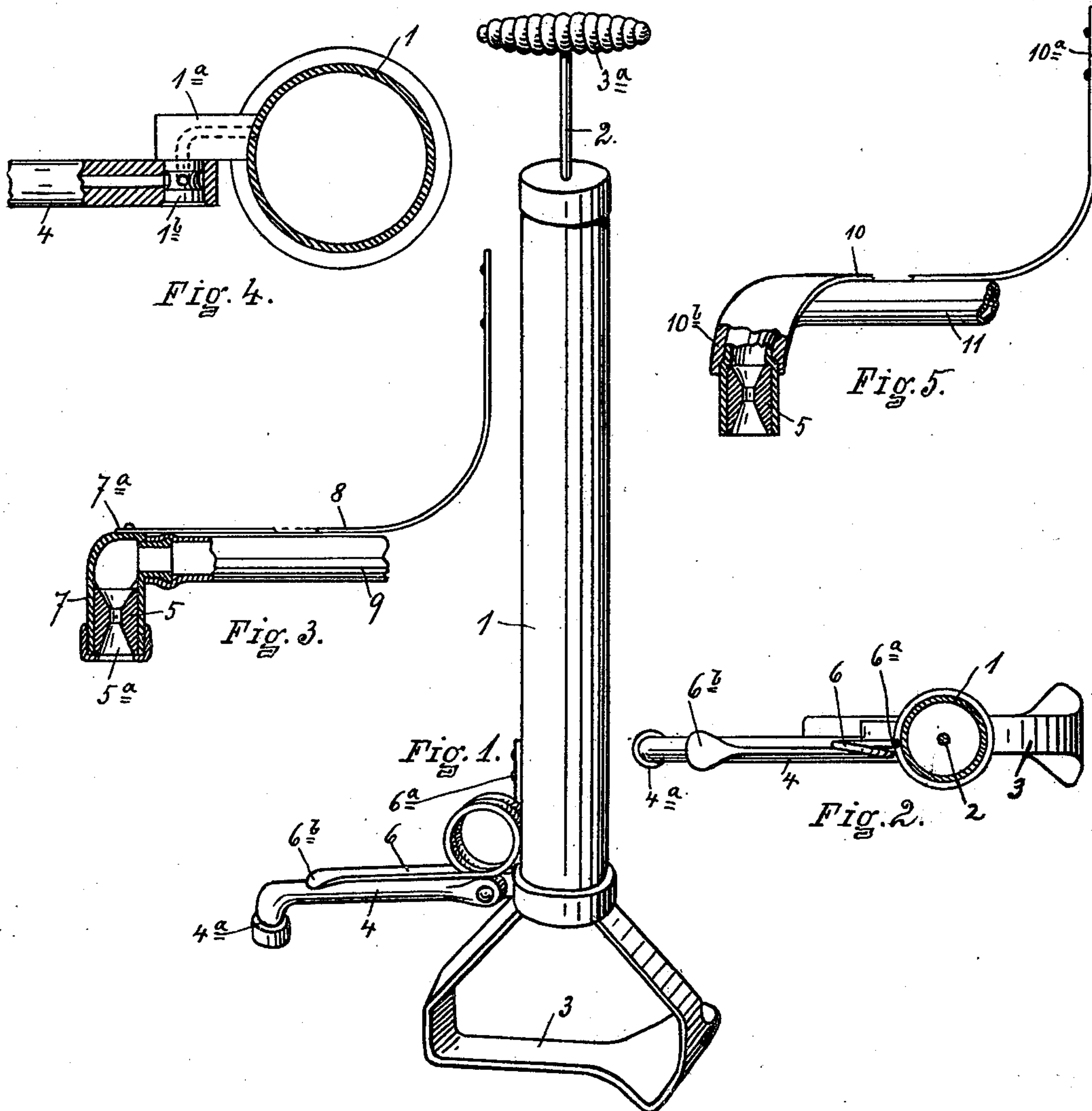
No. 684,001.

Patented Oct. 8, 1901.

DE WANE B. SMITH.
BICYCLE PUMP.

(Application filed Apr. 27, 1899.)

(No Model.)



WITNESSES.
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BICYCLE-PUMP.

SPECIFICATION forming part of Letters Patent No. 684,001, dated October 8, 1901.

Application filed April 27, 1899. Serial No. 714,637. (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
5 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
10 use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form part of this specification.

The object of my present invention is to
15 provide a bicycle-pump which can be attached to and detached from a bicycle-tire without manipulating screws or other connecting devices, and in which provision is made for a yielding of the tire connection to compensate
20 for various sizes and conditions of the tire either growing out of their inflation or otherwise.

In the drawings, Figure 1 shows a perspective view of a pump embodying the features
25 of my invention. Fig. 2 shows a plan view of the features at the lower end of the pump, together with a cross-section of the barrel. Fig. 3 shows details of a modified form of construction. Fig. 4 shows on an enlarged scale
30 details of the joint in the tube of Fig. 1. Fig. 5 shows details of still another modified form of construction.

Referring to the reference-figures in a more particular description, 1 indicates the usual
35 cylinder-barrel of a bicycle-pump, having a plunger at the lower end of the piston-rod 2 and a handle 3^a, by means of which the plunger is operated. At the lower end of the cylinder there is provided a stirrup or foot
40 3, adapted to support the cylinder when in operation, either from the floor or ground, and also to hold the pump in operative position by the operator placing his foot upon the pump foot or stirrup. The device for connecting the pump with the bicycle-tire consists, as shown in Figs 1 and 2, of a rigid
45 tube 4, having its outer end downwardly turned, as indicated at 4^a, and provided in the open downwardly-turned end 4^a with a soft-rubber or elastic bushing washer or soft
50 packing-piece 5, as shown in Figs. 3 and 5. The tube 4 is connected to the pump by a

pivotal joint 1^b, (similar to a gas-fixture joint,) provided on the pump extension-piece 1^a, passage-ways being provided in the part 1^a and the pivot, as shown. The packing-piece 5 has
55 a conical opening 5^a in its lower end, adapted to receive a valve-nipple such as is usually provided on bicycle-tires. For supporting the tube 4 in lateral position with reference
60 to the barrel 1 and permitting it to yield under an excess of upward pressure at the downwardly-turned end 4^a there is provided a spring 6, one arm of which is secured to the barrel at 6^a and the other end is secured to
65 or rests upon the top of the tube 4 at 6^b.

In the use of this pump after removing the usual cap from the valve-nipple of the bicycle-tire and bringing the tire into position so as to have the nipple project upwardly from
70 its lowest position on the wheel the operator brings the pump into proper position to place the downwardly-turned end 4^a over the nipple, which enters the conical opening 5^a in the bushing 5. The operator then places his
75 foot in the stirrup 3, when the pump is ready for operation. The arrangement of the parts is such that if the tire is entirely deflated the downwardly-turned end 4^a will still come into proper position to properly engage with the
80 nipple. However, if this is not so under unusual circumstances it can be brought into lower position by tilting the barrel by means of the handle 3^a toward the wheel. As the
85 tire is inflated and comes up to full form the yielding of the jointed tube or connection 4 will compensate for the increase in height and size of the tire, while the operator maintains the body of the pump in the same position. The strength of the spring 6 is such that
90 while it allows this yielding as the tire becomes inflated it will prevent the bushing from being blown off from the nipple by the pressure of the air which is being forced into the tire. The yielding or jointed connection
95 also adapts the pump for use with tires of various sizes, the variations being compensated for by the yielding of the spring.

In the modified form of construction shown in Fig. 3 instead of a jointed pipe or tube I
100 employ a bushing-head 7, preferably of metal or some firm material, in which the elastic bushing 5 is arranged. This head is secured at 7^a on the projecting end of the spring 8,

the other end of which is secured to the barrel or body of the pump at 7^b. The head 7 is connected with the pump-barrel by a short piece of hose 9. The operation of this form of construction is not materially different from that heretofore described and will be readily understood.

In the modified form of construction shown in Fig. 5 a spring 10 is employed, which is secured to the pump barrel or body at 10^a and is provided on its free end with an eye 10^b, which is downwardly turned and through which is passed the end of the hose 11, and the bushing 5, similar to those heretofore described, is inserted directly in the end of the hose. The opposite end of the hose of course connects with the pump-cylinder. The operation of this form of construction is also similar to that heretofore described.

Several other modified forms of construction will readily suggest themselves, all of which are within the spirit of my invention.

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

1. The combination with a bicycle-pump having a foot or stirrup of a movable tubular tire connection having a downwardly-turned end and an elastic bushing or packing therein adapted to engage the valve-nipple of the tire and a yielding support for the tubular connection, substantially as set forth.

2. The combination in a bicycle-pump having a barrel, plunger and stirrup or foot of a movable tire connection having a downwardly-turned end, an elastic bushing or packing therein adapted to engage the valve-nipple of the tire and a yielding support for the tubular connection arranged to yield under an excess of upward pressure at the bushing or packing substantially as set forth.

3. The combination with a bicycle-pump of a tire connection consisting of a projecting

tube having a pressure tire-coupling and means for permitting yielding of the tire connection under an excess of pressure at the coupling substantially as set forth.

4. The combination with a bicycle-pump having a foot or stirrup of a tire connection from the pump consisting of a laterally-projecting tube having a pressure-coupling opening in a direction parallel with the body of the pump and means for yieldingly supporting said pressure-coupling substantially as set forth.

5. The combination with a bicycle-pump having a foot or stirrup of a laterally-projecting movable tire connection and a spring-support therefor, substantially as set forth.

6. An air-pump having a rigid discharge-tube and a yielding joint between said pump and the said discharge-tube whereby the said discharge-tube may yield to the motion of the pump when in operation without disturbing the junction of the said discharge-tube with the air-valve or other inlet to the object to be inflated.

7. In a foot-pump the combination with the cylinder or barrel thereof, of a stirrup or foot, a yielding tubular tire connection having its inner end connected with the cylinder or barrel and its outer end provided with one member of an air-tight joint and a yielding support for the said tubular connection placed under tension when the pump is in use for holding the outer end of the said tubular connection in place when applied to the valve of a tire.

In witness whereof I have affixed my signature, in presence of two witnesses, this 22d day of April, 1899.

DE WANE B. SMITH.

Witnesses:

SARAH A. BROWN,
E. WILLARD JONES.