

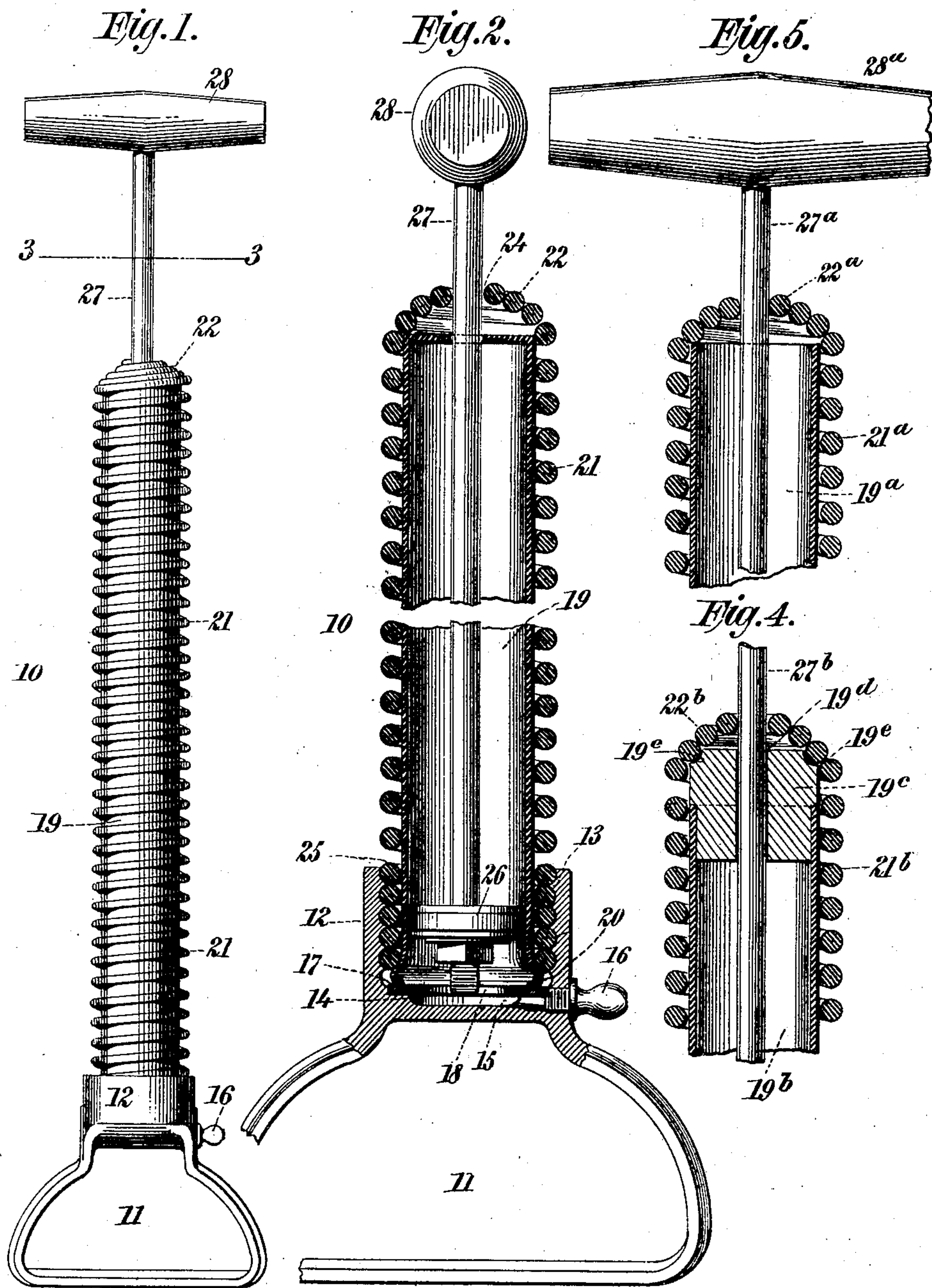
No. 764,747.

PATENTED JULY 12, 1904.

A. K. MILLER.
PUMP.

APPLICATION FILED OCT. 15, 1903.

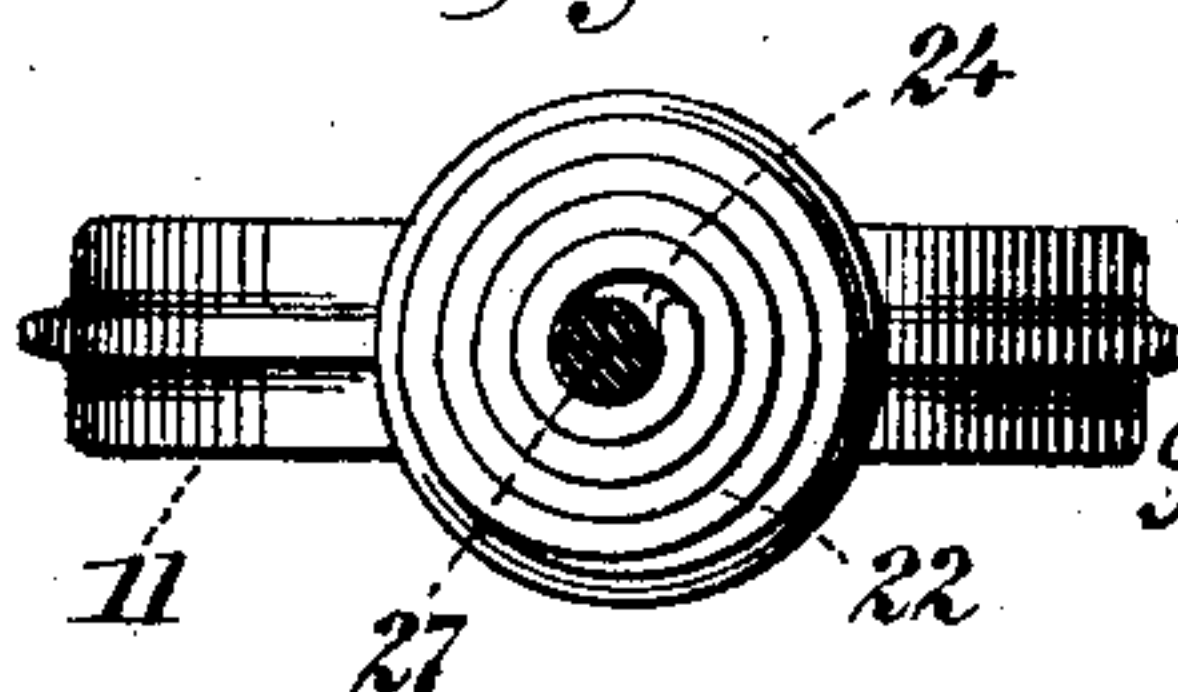
NO MODEL.



WITNESSES:

Gustave Dietrich.
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Fig. 3.



INVENTOR

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BY

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UNITED STATES PATENT OFFICE.

ARTHUR K. MILLER, OF PEEKSKILL, NEW YORK.

PUMP.

SPECIFICATION forming part of Letters Patent No. 764,747, dated July 12, 1904.

Application filed October 15, 1903. Serial No. 177,117. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR K. MILLER, a citizen of the United States, residing at Peekskill, Westchester county, in the State of New York, have invented certain new and useful Improvements in Pumps, of which the following is a full, clear, and exact specification.

My invention relates to improvements in apparatus for compressing fluids; and the same has for its object more particularly to provide, at greatly reduced cost of manufacture, a durable and efficient pump adapted for use in connection with bicycle and other tires and for charging divers forms of containers adapted to hold fluids under pressure.

These objects above set forth I am enabled to attain by means of my invention, which consists in the novel details of construction and in the combination, connection, and arrangement of parts hereinafter more fully described and then pointed out in the claims.

In the accompanying drawings, forming part of this specification, wherein like numerals of reference indicate like parts, Figure 1 is a side view of a foot-pump constructed according to and embodying my invention. Fig. 2 is an enlarged central section thereof, partly broken away. Fig. 3 is a section taken on the line 3 3 of Fig. 1. Fig. 4 is an enlarged detail central section of the upper part of a pump, illustrating a modified construction; and Fig. 5 is a similar view illustrating a further modification.

In said drawings, 10 denotes a pump comprising a stirrup or foot-piece 11, forming a support or base having a socket 12 at its top, provided upon its inner wall with screw-threads 13 and at its base with a shoulder 14 and a centrally-located recess 15.

16 denotes a nipple screwed into the socket 12 near its base and provided with an aperture communicating with the interior of the socket below the shoulder 14 thereof, said nipple 16 being adapted to receive one end of a rubber tube or other suitable connecting-section provided at its free end with an appropriate attaching device.

Within the socket 12, upon a suitable gasket 17, having a central aperture 18 therein, is disposed the lower end of a cylindrical

pump-casing 19, which is preferably closed at its upper end and open at its lower end and provided at said lower end with an outwardly-projecting annular rim or bead 20. The casing 19 is held duly in position in the socket 12 of the stirrup 11 and secured thereto by means of a volute spring 21, which snugly embraces said cylinder. The upper end of said spring 21 terminates in a spiral or helical end, which forms a head 22, having a central opening 24 therein, and the lower end of said spring terminates in a cylindrical end 25, produced by a plurality of convolutions arranged closely together and contacting with each other to form screw-threads which are adapted to engage with the threads 13 upon the inner wall of the socket 12 when the spring 21 is distended upon the casing 19, the effect of distending the spring 21 being to cause its helical head 22 to bear upon the upper end of the casing 19 and hold its lower end and the rim or bead 20 firmly pressed against its seat and upon the washer 17, the tight closure of the parts at this point being further insured by the screwing of the end 25 of the spring 21 into the socket 12, thereby causing its lowermost convolution to bear upon the upper outer surface of the rim or bead 20, and all lateral play or oscillation of the casing 19 prevented by the cylindrical end 25 of said spring 21 completely filling the space intermediate the inner wall or surface of the socket 12 and the outer surface of the end of the casing 19 located therein.

26 denotes a piston adapted to work within the casing 19, provided with a rod 27, whose upper end extends through the top of the casing and the helical head 22 and its extreme end provided with a handle 28, while its lower end, which extends below the piston 26 and is secured thereto by a nut 27^x, is adapted when said piston is in its lowermost position to extend through the aperture 18 in the washer 17 and contact with the bottom of the recess 15 of the socket to limit the downward movement of the piston.

The construction illustrated by the modification at Fig. 5 is substantially like that heretofore described, except that the casing 19^a is herein shown as open at its top and the

piston-rod 27^a simply guided in the apertured helical head 22^a of the spring 21^a, and in the modification shown at Fig. 4 the upper end of the casing 19^b is sealed with a plug 19^c, provided with a central aperture 19^d to guide the upper end of the piston-rod 27^b. 19^e denotes a peripheral groove arranged in the plug 19^c, and 21^b denotes the spring inclosing said casing 19^b, having its helical head 22^b bearing upon the grooved end of the plug 19^c to hold said casing 19^b in position within the socket of the support.

It will be observed that by constructing the pump as herein shown and described I am enabled to use lighter material for the casing than has heretofore been possible without danger of fracture by reason of the pressure produced therein or to damage from without—such, for example, as denting—since the spring for securing said casing to its support fully protects the same, and that by securing the parts together in the manner herein set forth I am enabled to dispense with the threading of the ends of the casing, head, and support by machine, since the only thread required—viz., the one in the socket 12—may be cast therein, and thus effect a considerable saving in the cost of production of the pump.

Without limiting myself to the details of construction, which may be varied within the scope of the invention, what I claim, and desire to secure by Letters Patent, is—

1. A pump comprising a casing, a piston and rod, a support for said casing, and means for holding said casing spring-pressed to said support, substantially as specified.

2. A pump comprising a casing, a piston and rod, a support for said casing, and spring means for holding said casing in position within said support, substantially as specified.

3. A pump comprising a casing, a piston and rod, a support for said casing, and means for holding one end of said casing spring-pressed to said support, substantially as specified.

4. A pump comprising a casing, a piston and rod, a support for said casing, a socket on said support and resilient means encompassing said casing and secured at one end to said support and having its other end bearing upon the top of the casing, substantially as specified.

5. A pump comprising a casing, a piston and rod, a support for said casing, a socket on said support, and spring means for holding said casing in position within said socket, substantially as specified.

6. A pump comprising a casing, a piston and rod, a support for said casing, a socket on said support, and a spring secured to said support and bearing against said casing to hold the same in position upon said support and within the socket thereon, substantially as specified.

7. A pump comprising a casing, a piston

and rod, a support for said casing, a socket on said support adapted to receive one end of said casing, and a spring secured to said support and bearing upon the other end of said casing to hold said casing in position upon said support, substantially as specified.

8. A pump comprising a casing, a piston and rod, a support for said casing, a socket on said support, and a spring secured to said support and encompassing said casing, substantially as specified.

9. A pump comprising a casing, a piston and rod, a support, a socket on said support adapted to receive one end of said casing, and a spring encompassing said casing having one end secured to said support and its other end bearing upon the other end of said casing to hold said casing in position upon said support and within the socket thereon, substantially as specified.

10. A pump comprising a casing open at one end, a piston and rod, a support, a socket on said support adapted to receive and inclose the open end of said casing, and a spring encompassing said casing having one end secured to said support, and its other end bearing upon the outer closed end of said casing, to hold said casing in position upon said support and within the socket thereon, substantially as specified.

11. A pump comprising a casing open at its lower end, a piston and rod, a support, a socket on said support provided upon its inner wall with screw-threads and adapted to receive and inclose the open end of said casing, and a volute spring encompassing said casing having a cylindrical lower end adapted to engage the screw-threads upon the inner wall of the socket, and a helical head at its upper end adapted to bear upon the upper end of said casing, substantially as specified.

12. A pump comprising a casing open at its lower end and provided at said end with an annular bead or rim, a piston and rod, a support for said casing, a socket on said support provided upon its inner wall with screw-threads and adapted to receive and inclose the open end of said casing, an outlet-port at the base of said socket, and a volute spring encompassing said casing having a cylindrical lower end adapted to engage the screw-threads upon the inner wall of the socket, and a helical head at its upper end adapted to bear upon the upper end of said casing, substantially as specified.

13. A pump comprising a casing, open at its lower end and provided at said end with an annular outwardly-extending bead or rim, a piston and rod adapted to work within said casing, a support for said casing, a socket on said support adapted to receive and inclose the open end of said casing and provided upon its inner wall with screw-threads, and at its base with an outlet-port and a shoulder, a packing disposed upon said shoulder, and a volute spring encompassing said casing having a cy-

lindrical lower end adapted to engage the screw-threads upon the inner wall of the socket, and a helical head at its upper end bearing upon the upper end of said casing and
5 coöperating with the lower cylindrical end of said spring to hold said casing in position on its support, and its open lower end firmly seated therein, substantially as specified.

10 14. A pump comprising a casing, open at its ends, a plug or head removably disposed in the upper end of said casing, a piston and rod, a support for said casing, a socket on said support adapted to receive and inclose the open
15 end of said casing, screw-threads provided upon the inner wall of said socket, and a volute spring encompassing said casing having

a cylindrical lower end adapted to engage the screw-threads upon the inner wall of the socket, and a helical head at its upper end adapted to bear upon the plug or head in the
20 upper end of the casing whereby to hold the casing securely in position upon the support and within the socket thereon, substantially as specified.

Signed at the city of Minneapolis, in the
25 county of Hennepin and State of Minnesota, on the 10th day of October, 1903.

ARTHUR K. MILLER.

Witnesses:

LOUIS B. HASBROUCK,
JOHN A. STRALEY.