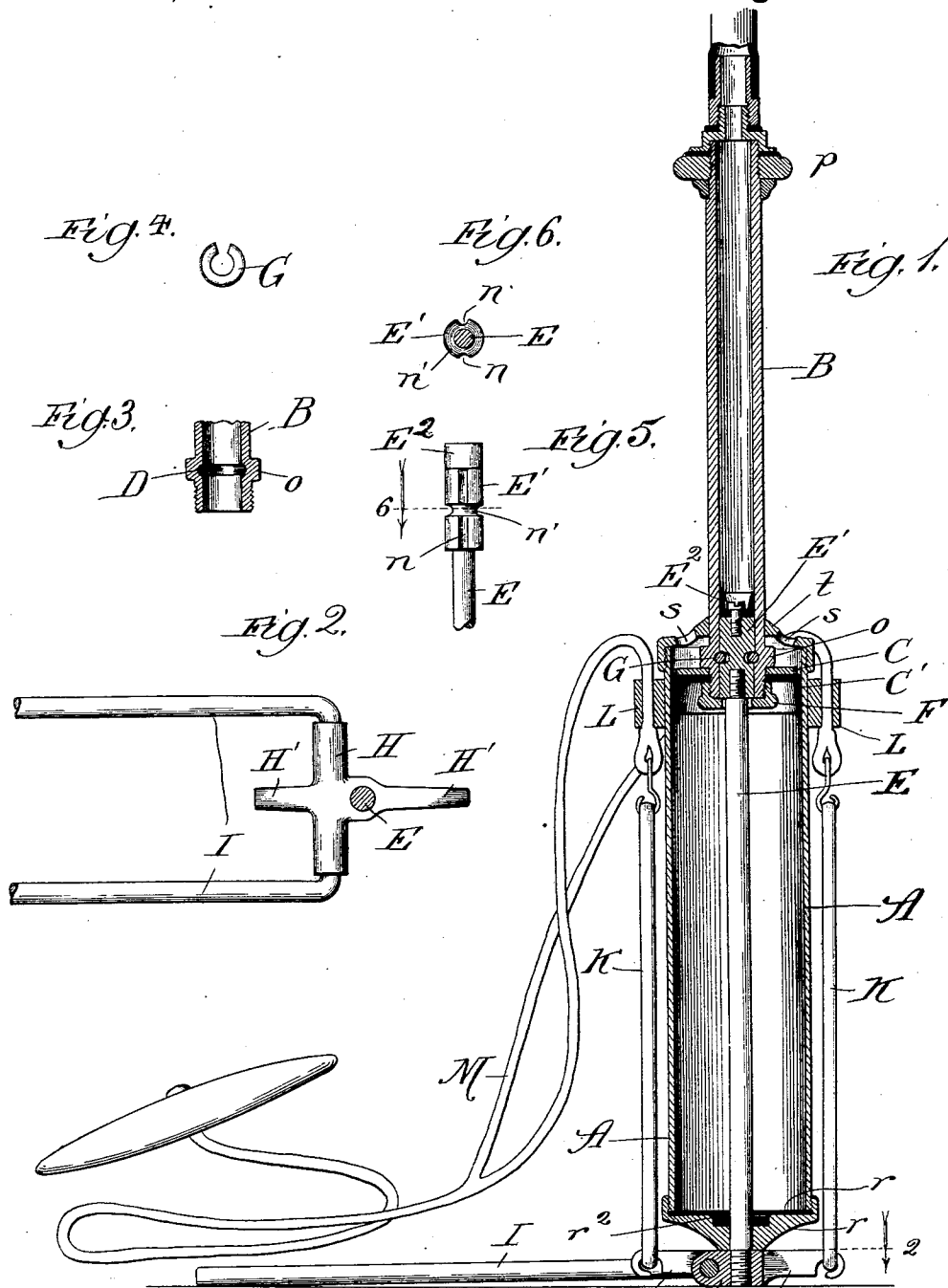


(No Model.)

H. LEINEWEBER.  
PUMP FOR PNEUMATIC TIRES, &c.

No. 587,979.

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Witnesses:  
E. S. Gaylord,  
L. S. S. S.

Inventor:  
Herman. Leineweber,  
By *[Signature]*  
Att'y

# UNITED STATES PATENT OFFICE.

HERMAN LEINEWEBER, OF CHICAGO, ILLINOIS.

## PUMP FOR PNEUMATIC TIRES, &c.

SPECIFICATION forming part of Letters Patent No. 587,979, dated August 10, 1897.

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*To all whom it may concern:*

Be it known that I, HERMAN LEINEWEBER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Pumps for Pneumatic Tires, &c., of which the following is a specification.

My invention relates to an improvement in pumps of the nature useful in charging pneumatic tires for bicycles with the requisite amount of air under pressure. Pumps of this class are divided usually into two kinds—viz., hand-pumps and foot-pumps. It is found that by using a foot-pump, by which is to be understood a pump which is held in place by the foot and is operated by hand, the requisite pumping of the tire is effected with less labor and with much less physical inconvenience. On the other hand, the use of the hand-pump necessitates the stooping of the operator while pumping the tire, and, as the barrel of the pump must be held in one hand while the piston is operated with the other, not only is the operation of pumping slow, even when the pump be the so-called "double-acting" style, but the barrel becomes heated very much to the discomfort of the user.

The object of my invention is to produce a pump which may be of the size of the ordinary hand-pump—that is to say, of a size adapting it to be placed in the tool-bag commonly carried with the bicycle, but which when in use shall be adapted to be held to the ground by the foot and operated for the rapid and effectual pumping of the tire without either touching the pump with the hand or stooping over into an uncomfortable attitude while operating it.

To these ends my invention consists, primarily, in a pump comprising a barrel and piston operated relative to each other by a lifting action exerted through a flexible or folding connection with the hand and having a hinged pedal extension whereby the stationary member is held to the ground.

My invention consists, further, in the general and specific details of construction and combination of parts, all as hereinafter more fully set forth.

In the drawings, Figure 1 is a central longitudinal sectional view of a pump embodying my preferred form. Fig. 2 is a plan view

of the foot-rest, taken on the line 2 of Fig. 1. Fig. 3 is a central vertical section taken at the lower or inner end of the piston-tube; Fig. 4, a plan view of the expanding ring which effects the lock between the members of the piston in operation. Fig. 5 is a view in elevation taken at the upper end of the solid member of the piston-rod, and Fig. 6 is a transverse sectional view on the line 6 of Fig. 5 and viewed in the direction of the arrow.

A represents the ordinary pump-barrel, closed at its upper end with the centrally-perforated cap *t*, which may, if desired, have the air-admitting perforations *s*, although for ordinary purposes it is found entirely sufficient to form enlargements of the central perforation through which the tubular piston-rod passes as the means for admitting air to the pump-barrel. The other end of the barrel A is closed by the centrally-perforated cap *r*, in which I prefer to place the leather packing *r'* and the felt washer or packing *r*<sup>2</sup>.

B represents the tubular piston-rod, the upper end of which is provided with the usual connection *p* for attaching the flexible tube leading to the nipple in the tire-valve and at its other end carrying the piston C, to which is secured the cup-shaped washer C', preferably made of leather. Adjacent to the piston C the tube B has the annular enlargement *o*, and within the tube at the point of the enlargement *o* is an annular recess D. The tube B forms in use one member of the piston connection, the other member being found in the rod E, which passes through and fits snugly in the central aperture in the cap *r*, and carries at its upper end the elongated head E', having the longitudinal grooves, one or more in number, *n*, and at or near a central point the annular groove *n'*. At its upper end the head E' may, if desired, carry the cup-shaped washer E<sup>2</sup>, as shown in Figs. 1 and 5. A cap F, internally screw-threaded and centrally perforated, fits upon the lower end of the piston-tube B, and the perforation in this cap receives the rod E. The purpose of the cap is to prevent separation of the members E and B, constituting the piston-rod.

It will be understood that the central perforation in the cap F is sufficiently large to permit the air to pass from the body of the barrel to the bore of the tube B through the

lateral passages *n*. An expanding ring G, preferably of spring metal, embraces the head E' in the groove *n'*, and when in normal position it presents a greater diameter than the head E'. Its function is to serve as a lock between the head E' and the tube E when the annular grooves D and *n'* coincide, or, in other words, when the parts are in the position illustrated in Fig. 1.

- 10 The opposite or lower end of the rod E, after it passes through the cap *r*, has a screw-threaded connection with the brace H, which receives and carries the bent arm I, constituting the pedal extension. It will be seen that the bent arm I may by reason of this connection be turned downward to the position shown in Fig. 1, where the foot may rest upon it to hold the pump to the ground, or it may be turned upward to lie snugly against the side of the barrel A. The brace H may, if desired, have the hook projections H' to receive the lower end of an elastic strap K, one or more in number, the opposite ends of which straps are connected with hooks held to the barrel A.

- 25 Properly secured to the barrel A, as through the medium of lugs L, is a cord, chain, rod, or other rigid or flexible medium M, the purpose of which is to afford a means for lifting the pump-barrel by hand and without stooping while the pedal extension I is held down by the foot. I prefer to use a cord or chain for this purpose, as it may be readily wrapped about the pump-barrel when the device is collapsed, but I do not limit myself to this agency, merely suggesting that if a rod is substituted therefor it is preferable that it shall be collapsible, either by disjoining it or by folding it upon itself.

- 40 I deem it unnecessary to illustrate more than the cord, and in claiming this feature I shall use the term "cord" with the understanding that it is intended to include any such substitute, as chain, rod, or the like, which the preference of the mechanic may lead him to select.

- The operation is as follows: The pump being in a collapsed condition—that is to say, all the parts being forced together, so that the pedal extension I is folded up parallel with the barrel and the piston-tube B forced inward, so that the piston C will be near to or at the cap *r*—to put the pump into operative condition the pedal extension I is turned to the position indicated in Fig. 1 and the piston-tube B drawn outward until the annular grooves D and *n'* in the tube B and head E' respectively coincide, whereupon the split ring G expanding serves to lock the members E and B in their relation to each other illustrated in Fig. 1. Lifting the pump-barrel A by power applied through the cord M will cause the air in the barrel to be forced through the tube B to the nipple. The return of air from the tube B to the barrel A is prevented by the cup-shaped packing E<sup>2</sup>. The barrel having been lifted to its highest point, its re-

turn to its lowermost position is effected in part by the springs K and in part by the expansion of the air compressed in the tube B. I may state that the expansion of the air in the tube B is ordinarily sufficient to cause the pump-barrel to return to the position indicated in Fig. 1 without employing the springs K, which may therefore be dispensed with. On the return of the barrel A to its original position the air admitted through the apertures *s* or such other apertures as may be provided for the purpose passes around the packing C' and into the barrel below the piston. The pumping operation may be repeated in this manner until the tire is inflated. Thereupon to collapse the pump into its desired small compass a sharp blow directed upon the end of the tube B will cause the members E and B to telescope one within the other, the split ring G readily contracting to permit this to be done under such sharp impact.

I do not limit myself to any particular connection between the members E and B, although that here shown is believed to be the one most desirable. Means may be provided by which a so-called "bayonet-joint" connection between the members may be effected, this mechanical expedient being so well known as to require no specific description and not further described herein, because it, with its preferred details, will form the subject of a separate application for Letters Patent about to be filed. It is mentioned merely in illustration of the fact that to the skilled mechanic modifications, more or less operative, of the specific joint may be contrived.

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

1. A pump for pneumatic tires and the like, comprising a barrel and a piston, said piston comprising two telescoping members adapted to be interlocked at need, one of said members constituting a tube for the passage of air compressed in the pump to the nipple, substantially as described.

2. A pump for pneumatic tires and the like, comprising a barrel and means for lifting the same, a piston and a pedal extension for holding the same in fixed position while the barrel is being lifted, and a tube having a fixed connection with the piston and leading from the barrel, substantially as described.

3. A pump for pneumatic tires and the like, comprising in combination a barrel and means for operating the same with relation to the contained piston, a piston within the barrel and a tube leading from said piston, a pedal extension, a rod leading from the pedal extension to the piston, and means for locking the rod and piston together at need, substantially as described.

4. A pump for pneumatic tires adapted to be held to the ground and operated by hand and adapted to be collapsed when not in use into a small compass, and to this end comprising a barrel, a piston, a piston-tube, a piston-rod, means for interlocking said tube

and rod at will and their ready unlocking, and a pedal extension, all said parts being constructed substantially as described.

5 5. A pump for pneumatic tires comprising a barrel A, piston C, tube B, rod E and a locking mechanism for the rod and tube, whereby they may be held together at will or unlocked and collapsed one upon the other, and a pedal extension connected with the rod  
10 E, substantially as described.

6. In a pump for pneumatic tires, of the nature described, the combination with the barrel A and piston C, of a tube B having the annular recess D and the rod E having the  
15 head E' provided with the annular recess n' and the ring G, substantially as and for the purpose described.

7. In a pump of the character described, the combination with the pump-barrel A and  
20 the piston therein and with the piston-tube B and rod E and means for interlocking the

same at will, of the packing E<sup>2</sup> in the tube B, as and for the purpose described.

8. The combination with a pump and its piston, of a pedal extension, whereby the  
25 pump may be held to the ground, a handle and a flexible connection between the handle and the movable member of the pump, whereby the pump when not in use may be confined within a space permitting its inclosure  
30 in the tool-bag of a bicycle, as set forth.

9. The combination with the barrel A, the piston therein and means for holding the piston in fixed relation with the ground and  
35 with a cord or the like for lifting the barrel to compress air therein, of the springs K for returning the barrel to its normal position, substantially as described.

HERMAN LEINEWEBER.

In presence of—

J. H. LEE,

R. T. SPENCER.