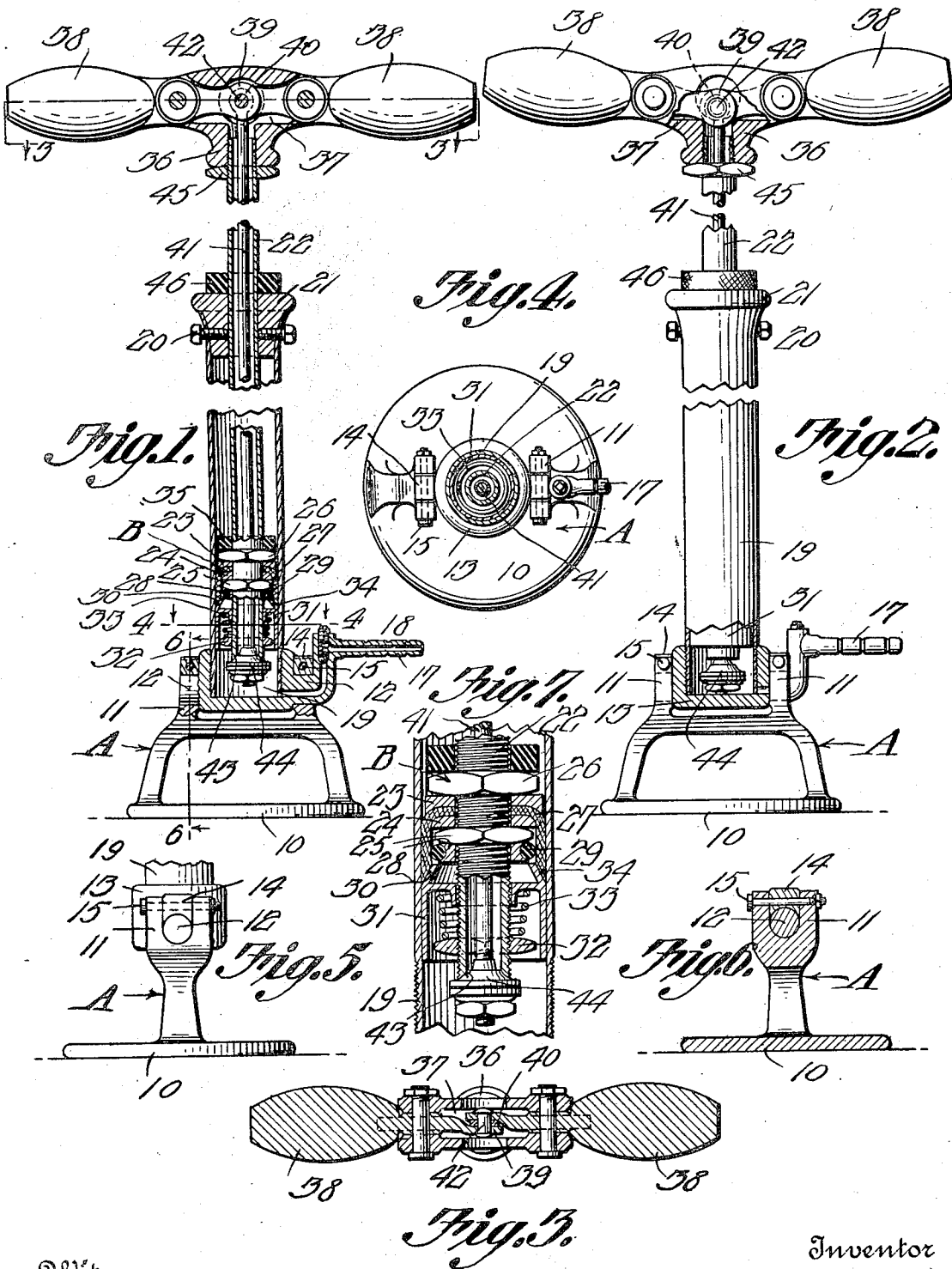


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PUMP.
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PUMP.

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To all whom it may concern:

Be it known that I, WILLIAM A. CAMPBELL, a citizen of the United States, residing at Maricopa, in the county of Kern, State of California, have invented certain new and useful Improvements in Pumps; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to pumps and particularly to a type adapted for use in inflating the tires of automobiles and also for filling reservoirs, boilers or tanks with air or liquids.

The object of the invention resides in the provision of a pump of the type named in which material to be delivered thereby is conveyed to the compression side of the plunger through the piston and the passage of such material through the piston controls automatically by the force exerted upon the handles of the pump during operation.

A further object of the invention resides in the provision of a pump of the type named which includes an improved form of plunger and improved means for automatically maintaining a tight fit of the plunger within the barrel so that no portion of the stroke of the plunger is lost by failure to effect a compression of the material being delivered by the pump.

A still further object of the invention resides in the provision of a pump of the character named in which the barrel is free to swing in a vertical plane during the operation of the pump.

With the above and other objects in view the invention consists in the details of construction and in the arrangement and combination of parts to be hereinafter more fully described and particularly pointed out in the appended claims.

In describing the invention in detail reference will be had to the accompanying drawings wherein like characters of refer-

ence denote corresponding parts in the several views, and in which—

Figure 1 is a vertical section of a pump with the parts in the position they would occupy during the in or compression stroke of the pump. Fig. 2 a view similar to Fig. 1 with the parts in the position they would occupy during the out or charging stroke of the pump. Fig. 3 a section on the line 3—3 of Fig. 1. Fig. 4 a section on the line 4—4 of Fig. 1. Fig. 5 an end view of what is shown in Fig. 4. Fig. 6 a section on the line 6—6 of Fig. 1, and, Fig. 7 is an enlarged section of the lower end of the pump.

Referring to the drawings A indicates the stand of the pump and comprises the usual foot plate 10 upon which is adapted to be placed the foot of the operator for the purpose of steadying the pump during operation as is well known. The stand A terminates at its upper end in aligned trunnion bearings 11 in which are rotatably mounted the trunnions 12 of the pump base 13, said trunnion being secured against displacement from the bearings 11 by means of blocks 14 secured to the bearings 11 above respective trunnions 12 by means of pins 15. One of the trunnions 12 is extended to form a hose connection 17 and disposed in this extension of the trunnion 12 is a check valve 18. The extension of the trunnion 12 just referred to is of course tubular and the bore thereof communicates with the interior of the base 13. Threaded in the base 13 is a pump barrel 19 the upper end of which is flared and has mounted therein by means of screws a bushing 21. Slidable in the bushing 21 is a tubular piston-rod 22 which has mounted thereon within the barrel 19 a cup plunger B. This plunger B comprises suitably shaped disks 23 and 24 which are loosely mounted upon the piston-rod 22 and between which is clamped by means of lock nuts 25 and 26 threaded on the piston-rod 22, a flexible cup 27 the outer edges of which are directed toward the base 13 and lie against the inner wall of the barrel 19. Mounted on the piston-rod 22 beneath the

nut 25 is a disk 28 the periphery of which has mounted thereon a rubber band 29 engaging the outer portion of the cup 27 and serving to hold said portions of the cup against movement inwardly of the barrel. It will be noted that the edge of the cup 27 is beveled as at 30 for a purpose that will presently appear. Slidably mounted on the piston-rod 22 beneath the disk 28 is a cup spreader 31 which is of cylindrical formation and has its upper end closed and provided with a bearing opening through which the piston-rod 22 extends. Mounted upon the piston-rod 22 beneath the closed end of the cup spreader 31 is a nut 32 and encircling the piston-rod 22 with one end bearing against the closed end of the cup spreader 31 and its other end against the nut 32 is a spring 33 which constantly tends to move the cup spreader 31 outwardly of the barrel 19, the tension of said spring being adjusted by manipulating the nut 32. The cup spreader 31 terminates at its upper end adjacent the cup 27 in a tapering portion 34 which coöperates with the beveled edge 30 of the cup so that the movement of the spreader 31 under the influence of the spring 33 will force the outer portion of the cup 27 tightly against the wall of the barrel 19 and in this manner tight engagement between the plunger B and the barrel 19 is always assured.

Mounted on the piston-rod 22 above the nut 26 is a rubber ring 35 which is adapted to contact with the inner end of the bushing 21 and limit the outward movement of the plunger. Threaded on the outer end of the piston-rod 22 is a cross head 36 provided with a recess 37 which communicates with the interior of the piston-rod 22. This recess 37 opens laterally through each side of the cross head 36 so as to permit of free access of air to the interior of the piston-rod 22 and also for the purpose of facilitating the assembling of certain parts of the pump to be presently described. Pivottally mounted in the cross head 37 are opposed handles 38 the inner ends of which are extended beyond their pivots and terminate in eye portions 39 adapted to aline with an eye member 40 which constitutes the upper end of a rod 41 extending longitudinally through the bore of the piston-rod 22. The eye portions 39 and the eye member 40 are pivottally connected by means of a pin 42. The lower end of the piston-rod 22 is beveled as at 43 to form a seat for a valve 44 which is suitably secured to the inner end of the rod 41. The cross head 36 is secured against rotation on the piston-rod 22 by means of a lock nut 45 threaded on said piston.

Assuming the plunger B to be in its outermost position it will be apparent that when

same is forced inwardly by pressure exerted on the handle 38 the air or other material on the inner side of the plunger will be compressed and forced out through the connection 17. It will be further apparent that on this compression stroke of the plunger the outer ends of the handles 38 will move toward the base of the pump which will result in the rod 41 being moved outwardly of the piston and the valve 44 firmly seated against the inner end of the piston to prevent escape of air from the compression side of the plunger to the atmosphere. On the out stroke of the plunger B the inner ends of the handles 38 will be operated, as will be obvious, to move the rod 41 inwardly of the piston-rod 22 and unseat the valve 44 so that a fresh supply of air can readily pass through the piston to the compression side of the plunger. It will be here noted that as no air passes around the plunger B same will always be maintained tightly against the barrel so that compression will start immediately the in stroke of the plunger is instituted. This in stroke of the plunger B is limited by means of a rubber ring 46 mounted on the outer end of the bushing 21, which ring is adapted to be engaged at the limit of the in stroke of the plunger by the nut 45.

It will be noted that the movements of the valve 44 during the operation of the pump can be adjusted by effecting an adjustment of the cross head 36 on the piston-rod 22. It will be further noted that the upper end of the barrel 19 terminates in a flared or bell mouth which permits of easy insertion of the plunger.

What I claim is:—

1. In a pump, the combination of a barrel having a discharge opening at its lower end, a bushing mounted in the upper end of said barrel, a piston rod slidable in said bushing, a flexible cup piston mounted on said piston-rod and having its outer portion directed inwardly and disposed against the inner wall of the barrel and further having its edge beveled, a collar mounted on the piston-rod within the cup piston, a resilient ring mounted in the periphery of the collar and engaging the inner face of the cup piston to prevent inward movement of the latter, a plunger slidable in the barrel and provided with a beveled portion coöperating with the beveled edge of the cup piston to force the outer portion of the latter against the inner wall of the barrel, and spring means constantly tending to move said plunger into coöperative relation to the piston.

2. In a pump, the combination of a barrel having a discharge opening at its lower end, a bushing in the upper end of said barrel, a tubular piston-rod slidable in said bush-

ing, a piston mounted on said piston-rod within the barrel, a valve for controlling the opening at the inner end of the piston-rod a head secured to the outer end of the piston-rod provided with a transverse passage communicating with the bore of the piston-rod, a rod secured to said valve and slidable in the bore of the piston rod, oppositely disposed handles pivoted in said transverse passage and having their inner ends pivotally

connected to said rod whereby the force applied to the handles to effect the in and out strokes of the piston will close and open said valve respectively.

In testimony whereof, I affix my signature, in the presence of two witnesses.

WILLIAM A. CAMPBELL.

Witnesses:

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Mrs. M. L. TIFFANY.