No. 753,530. PATENTED MAR. 1, 1904.

F. E. TEN EYCK.

PUMP.

APPLICATION FILED NOV. 18, 1901.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

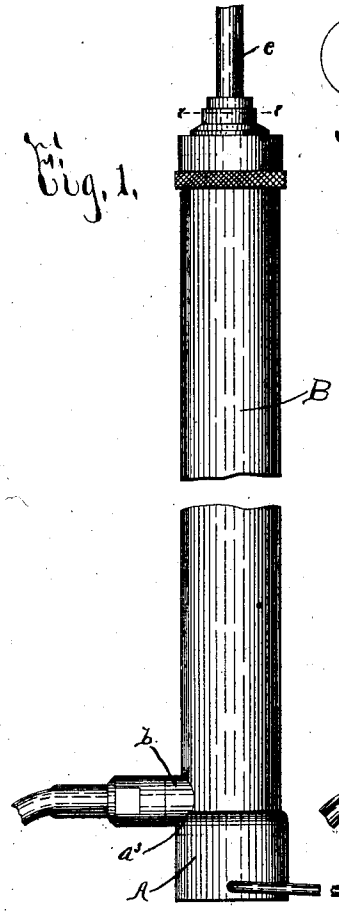


Fig. 2.

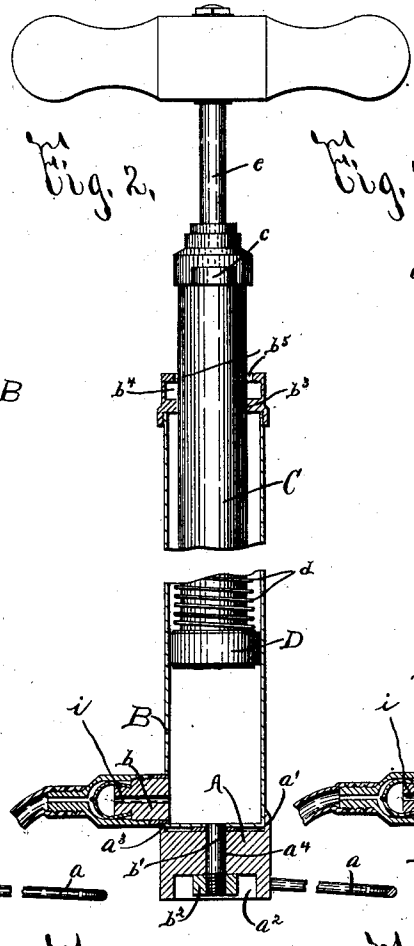


Fig. 3.

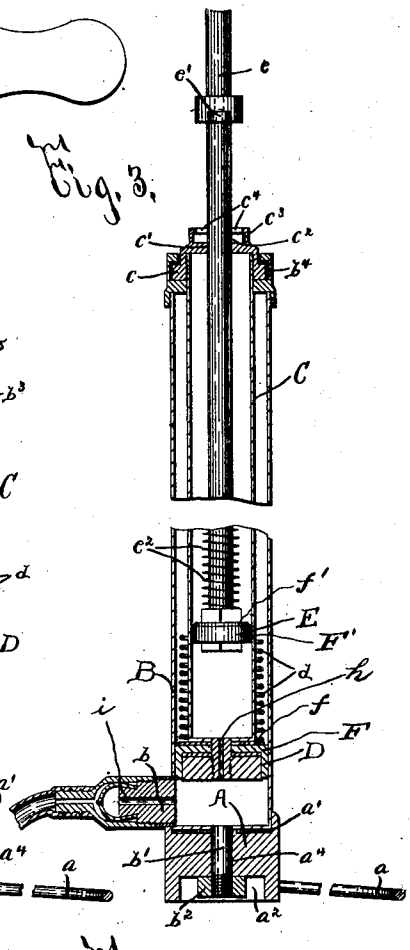


Fig. 5.

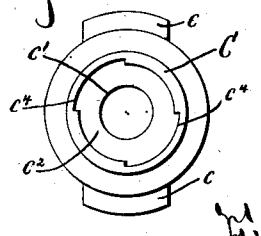


Fig. 4.

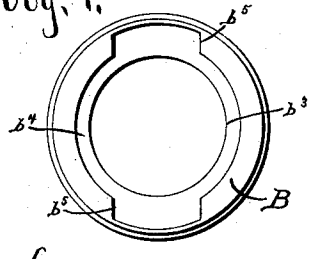


Fig. 7.

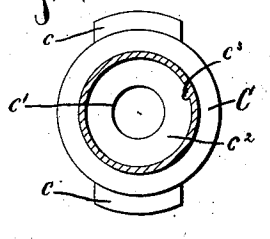
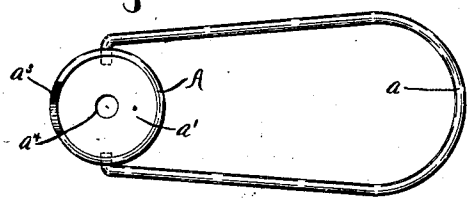


Fig. 6.



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ATTORNEYS

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Fig. 8.

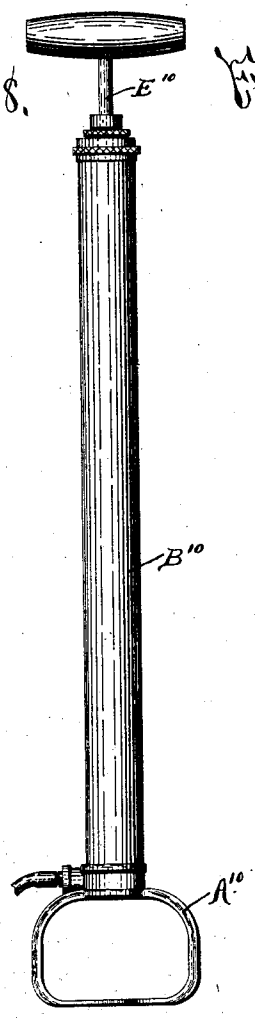


Fig. 9.

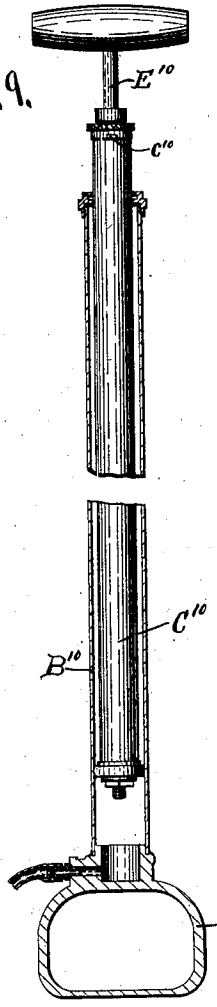


Fig. 10.

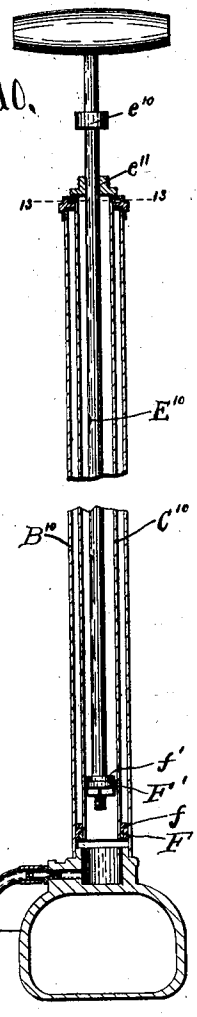


Fig. 11.

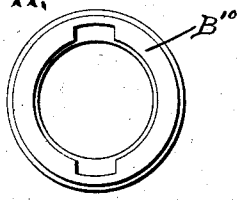


Fig. 12.

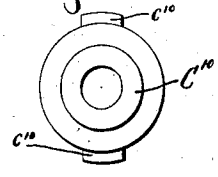
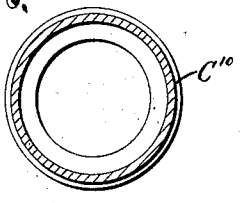


Fig. 13.



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No. 753,530. Patented March 1, 1904.

UNITED STATES PATENT OFFICE.

FRANK E. TEN EYCK, OF AUBURN, NEW YORK.

PUMP.

SPECIFICATION forming part of Letters Patent No. 753,530, dated March 1, 1904.

Application filed November 18, 1901. Serial No. 82,611. (No model.)

To all whom it may concern:

Be it known that I, FRANK E. TEN EYCK, of Auburn, in the county of Cayuga and State of New York, have invented a certain new and useful Pump, of which the following is a specification.

This invention has for its object the production of a pump which is especially applicable for inflating pneumatic tires, and is particularly simple in construction, economical in manufacture, and highly efficient and durable in use; and to this end it consists in the devices and combinations hereinafter described and claimed.

Figure 1 is an elevation, partly broken away, of my pump. Figs. 2 and 3 are longitudinal sectional views, partly broken away and in elevation, of said pump, illustrating the inner cylinder and the piston-rod in different positions. Figs. 4, 5, and 6 are top plan views of the detached outer and inner cylinders and the base of my pump. Fig. 7 is a sectional view of the inner cylinder, taken on line 7 7, Fig. 1. Fig. 8 is an elevation of a modified construction of my pump. Figs. 9 and 10 are longitudinal sectional views, partly broken away and in elevation, of the pump seen in Fig. 8, showing its inner cylinder and piston-rod in different positions. Figs. 11 and 12 are top plan views of the detached outer and inner cylinders of the pump seen in Figs. 8 to 10, inclusive. Fig. 13 is a sectional view of the outer cylinder, taken on line 13 13, Fig. 10.

My pump consists of a base A and outer and inner cylinders B C. The base A is preferably provided with a foot-piece a, pivoted thereto, sockets a' a^2, opening inwardly from opposite surfaces, a cut-out a^3, extending downwardly from the upper edge of the wall of the socket a' through the inner and outer faces of said wall, and an opening a^4, connecting the sockets a' a^2. One end of the outer cylinder B is inserted into the socket a' and is provided with a suitable lateral arm b, arranged in the cut-out a^3 and having a lengthwise inlet-passage i for the exhaust of the air from cylinder B, and with a downwardly-projecting arm b', which is extended through the opening a^4 into the socket a^2, and is provided with a nut b^2, adjustable thereon in the socket a^2. Said arms b b' rigidly secure the cylinder B to the base A. The opposite or free end of the cylinder B is provided with a substantially central opening b^3, formed with an annular groove b^4, and with opposite cut-outs b^5, extending from the groove b^4 through the contiguous end face of the cylinder.

The inner cylinder C telescopes in the outer cylinder B and is provided at one end with a piston D, suitably secured thereto, which piston has passage h, leading into cylinder C and into cylinder B for the outlet of air, and a spring d, encircling the cylinder C, and having one extremity engaged with the piston D and its other extremity movable into engagement with the inner face of the free end of the cylinder B. The other end of the cylinder C is provided with opposite arms c of less size than the cut-outs b^5 for locking the inner and outer cylinders together and with a substantially central opening c', formed with an annular groove c^2, an engaging shoulder c^3 in the groove c^2, and opposite cut-outs c^4, extending from the groove c^2 through the contiguous end face of the cylinder C. A suitable piston E is movable in the cylinder C and is provided with a piston-rod e, which is formed with opposite arms e' of less size than the cut-outs c^4 for locking the piston-rod to the inner cylinder C and rotating the inner cylinder within the outer cylinder and is movable endwise and rotatable in said cylinder C for forcing the arms e' through the cut-outs c^4 and into their operative position in the annular groove c^2 in engagement with the shoulder c^3. As here illustrated, the piston-rod e is fixed to the piston E; but said piston-rod may obviously be journaled in the piston E, if desired. Said piston-rod e is usually encircled by a spring e^2, having one extremity engaged with the piston E and its other extremity movable into engagement with the inner face of the free end of the cylinder C.

In the construction of my pump seen in Figs. 8 to 13, inclusive, A^{10} represents a base, and B^{10} C^{10} outer and inner cylinders. The

base A^{10} is formed with a loop-shaped opening for facilitating engagement thereof by the user's foot, and the cylinder C^{10} is locked to the cylinder B^{10} by arms c^{10}, corresponding to the arms c, and is locked to the piston-rod E^{10} by a cap e^{10}, which screws upon a threaded projection e^{11}, extending upwardly from the upper or free end of said cylinder c^{10}.

Air is admitted to the cylinder B around the cylinder C, which is loosely and movably mounted in the opening of the former, while air enters the cylinder C around the piston-rod e between the rod and the sides of the opening c' in the cylinder C. To permit of the air passing the piston D of the cylinder C for the operation of the pump, a rigid washer f, of less diameter than the internal diameter of the cylinder B, is affixed to the former cylinder, while beneath the same is secured a flexible cup-shaped washer F, which extends beyond washer f and the downwardly-extending portion of which is normally in close engagement with the sides of the cylinder B. A similar construction is used with the piston E of the piston-rod e, where the rigid washer is indicated by f' and the flexible cup-shaped washer by F'. Upon the upward stroke of either the piston-rod or cylinder C the washers F and F' are forced inwardly beneath the washers f and f', thereby permitting the air to pass the same and fill the space below the pistons D and E, while upon the downward stroke of these parts the cup-shaped washers are forced outwardly against the cylinders B and C, and air being confined beneath the pistons is forced thereby from the outlets of the pump.

In the use of the preferred construction of my invention the piston-rod e is rotated in the cylinder C for alining the arms e' with the cut-outs c^4, and is then moved endwise downwardly and partly rotated until the arms e' are in their operative position in the annular groove c^2 for locking the piston-rod e to the inner cylinder C. Air is then forced from my pump by reciprocating the piston-rod e, together with the inner cylinder C, locked thereto. When the pressure of the air in the tire or other receptacle being filled is sufficient to require considerable labor in reciprocating the cylinder C, the piston-rod e is again rotated in said cylinder C for engaging one of its arms e' with the shoulder c^3, whereupon the piston-rod e and the cylinder C are rotated together in the cylinder B until the arms c are alined with the cut-outs b^5. The piston-rod e is then moved endwise downwardly, carrying with it the cylinder C and forcing the arms c through the cut-outs b^5 and into the groove b^4, and said piston-rod and the cylinder C are afterward rotated until the arms c are in their operative position within the groove b^4 for locking the inner and outer cylinders together and preventing the cylinder C from endwise movement within the cylinder B. Said piston-rod e is then reversely rotated and moved upwardly in the cylinder C for unlocking the piston-rod e from said cylinder, whereupon the piston E may be reciprocated at will in the cylinder C for discharging the air therefrom even against considerable pressure.

The construction and operation of my pump will now be readily understood upon reference to the foregoing description and the accompanying drawings, and it will be particularly noted that more or less change may be made in the component parts thereof without departing from the spirit of my invention.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a pump of the character described, the combination with the base provided with oppositely-disposed sockets, of an outer cylinder having means thereon passing through said base for securing the same thereto, an inner cylinder telescoping in said other cylinder having a piston thereon for said last-named cylinder, a piston mounted within said inner cylinder, and means for locking said cylinder against movement during the operation of the piston therein, substantially as described.

2. In a pump of the type set forth, the combination with a base formed with sockets in its opposite surfaces, connected by an opening, one of said sockets having a cut-out portion, of an outer cylinder mounted in one of the sockets of the base, said cylinder having a laterally-extending arm arranged in the said cut-out portion provided with a lengthwise passage, means formed integral with said cylinder and extending through the base for securing the same thereto, an inner telescoping cylinder mounted in the last-named cylinder, a piston for the outer cylinder carried thereby, a second piston within said cylinder, and locking means to prevent relative movement of the cylinders while the inner piston is operated, substantially as described.

3. In a pump, the combination of an outer cylinder, an inner cylinder telescoping in the former cylinder and provided with a piston for the outer cylinder, a piston for the inner cylinder, and means for preventing movement of the inner cylinder relatively to the outer cylinder during the movement of the second piston, substantially as and for the purpose set forth.

4. In a pump, the combination of an outer cylinder, an inner cylinder telescoping in the former cylinder and provided with a piston for the outer cylinder and means for locking the inner and outer cylinders together, said inner cylinder being movable in the outer cylinder for forcing said means into its opera-

tive position, and a piston for the inner cylinder having a piston-rod provided with means for connecting the piston-rod to the inner cylinder and rotating the inner cylinder, said piston-rod being movable in the inner cylinder for forcing said means of the piston-rod into its operative position, substantially as and for the purpose described.

5. In a pump, the combination of an outer cylinder having one end provided with a substantially central opening formed with an annular groove and opposite cut-outs extending from the groove through the end face of the cylinder, an inner cylinder telescoping in the former cylinder and provided with a piston for the outer cylinder and with opposite arms of less size than the cut-outs for locking the inner and outer cylinders together, said inner cylinder being movable endwise and rotatable in the outer cylinder for forcing said opposite arms through the cut-outs and into their operative position in the annular groove, and a piston for the inner cylinder having a piston-rod provided with means for connecting the piston-rod to the inner cylinder and rotating the inner cylinder, said piston-rod being movable in the inner cylinder for forcing said means of the piston-rod into its operative position, substantially as and for the purpose specified.

6. In a pump, the combination of an outer cylinder, an inner cylinder telescoping in the former cylinder and provided with a piston for the outer cylinder and with means for locking the inner and outer cylinders together, said inner cylinder being movable in the outer cylinder for forcing said means into its operative position and having one end provided with a substantially central opening formed with an annular groove, an engaging shoulder in the groove, and opposite cut-outs extending from the groove through the end face of said cylinder, and a piston for the inner cylinder having a piston-rod provided with opposite arms of less size than the cut-outs for locking the piston-rod to the inner cylinder and rotating the inner cylinder, said piston-rod being movable endwise and rotatable in the inner cylinder for forcing its opposite arms through the cut-outs in the inner cylinder and into their operative position in the annular groove therein and into engagement with the shoulder in said groove, substantially as and for the purpose set forth.

7. In a pump, the combination of an outer cylinder having one end provided with a substantially central opening formed with an annular groove and opposite cut-outs extending from the groove through the end face of the cylinder, an inner cylinder telescoping in the former cylinder and having one end provided with a piston for the outer cylinder and its other end provided with opposite arms of less size than the cut-outs for locking the inner and outer cylinders together and with a substantially central opening formed with an annular groove, an engaging shoulder in the groove, and opposite cut-outs extending from the groove through the end face of the cylinder, said inner cylinder being movable endwise and rotatable in the outer cylinder for forcing said opposite arms through the cut-outs and into their operative position in the annular groove of the outer cylinder, and a piston for the inner cylinder having a piston-rod provided with opposite arms of less size than the cut-outs of the inner cylinder for locking the piston-rod to the inner cylinder and rotating the inner cylinder, said piston-rod being movable endwise and rotatable in the inner cylinder for forcing its opposite arms through the cut-outs in the inner cylinder and into their operative position in the annular groove therein and into engagement with the shoulder in said groove, substantially as and for the purpose described.

8. A pump of the character described comprising an outer cylinder having an annular groove formed at the upper end thereof, a cut-out extending from the groove through the outer face of the cylinder, an inner cylinder telescoping with the first-named cylinder provided with a piston at the lower end thereof, means carried by said second cylinder for engagement with the cut-out for locking the inner and outer cylinders together, a piston mounted in the inner cylinder, a piston-rod secured thereto and extending without the inner cylinder, and means carried by said piston for locking engagement with the inner cylinder whereby the cylinder and piston-rod may be moved together, substantially as described.

9. In a pump, the combination with an outer cylinder, and an inner cylinder telescoping in the first-named cylinder, said cylinder being movable vertically within said first-named cylinder, means carried by the inner cylinder adapted for locking engagement with the outer cylinder, a piston formed at the lower end of said inner cylinder, and a second piston mounted within the inner cylinder, having a piston-rod provided with means for locking engagement with said inner cylinder whereby said inner cylinder and piston may be locked together, said inner cylinder having means communicating with the outer cylinder, and said outer cylinder being provided with air-outlet means, substantially as described.

10. In a pump of the character described, the combination of outer and inner concentric cylinders, the inner of said cylinders being movable within the outer cylinder and having communication therewith, means carried by said inner cylinder for locking engagement with the outer one, the piston mounted exte-

riorly upon the inner cylinder, a piston mounted interiorly with respect to the inner cylinder, and means for actuating said last-named piston having locking means thereon for engagement with the inner cylinder whereby the inner cylinder and said means may simultaneously move, substantially as described.

In testimony whereof I have hereunto signed my name, in the presence of two attesting witnesses, at Syracuse, in the county of Onondaga, in the State of New York, this 11th day of November, 1901.

FRANK E. TEN EYCK.

Witnesses:
DORA LAVINE,
S. DAVIS.