(No Model.)

R. C. FAWCETT.

BICYCLER'S TOOL.

No. 544,726. Patented Aug. 20, 1895.

Fig. 1.

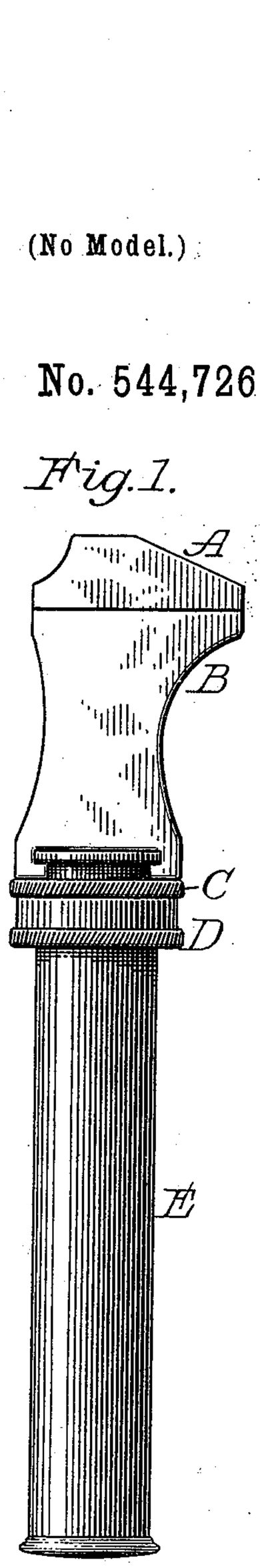


Fig. 2.

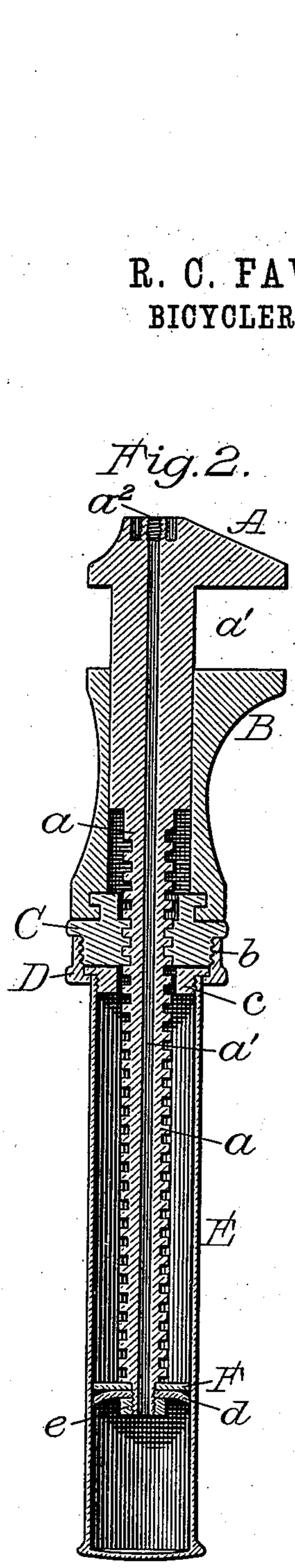


Fig. 3.

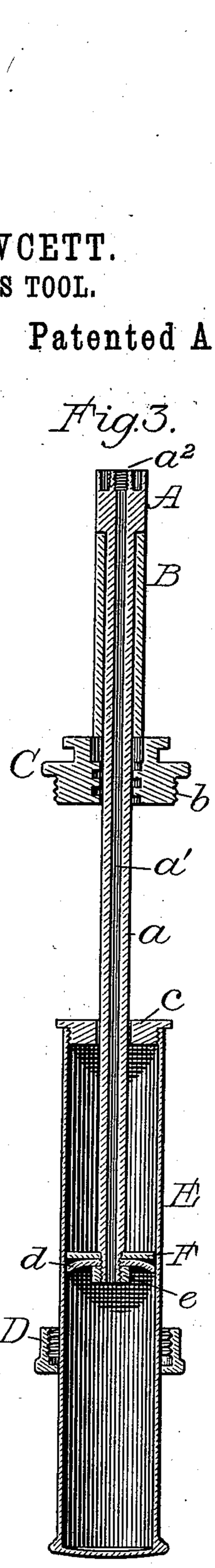


Fig. 4.

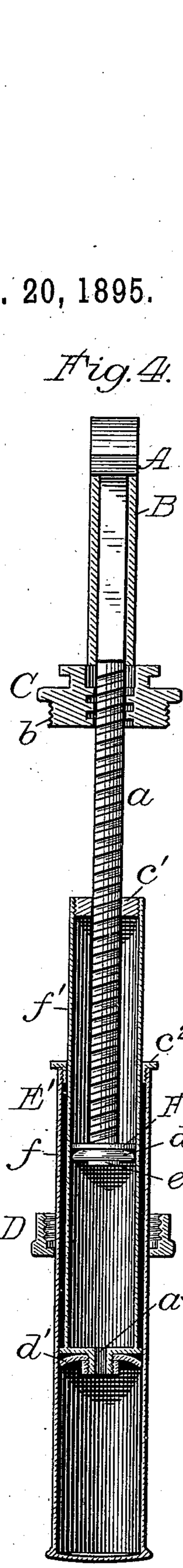
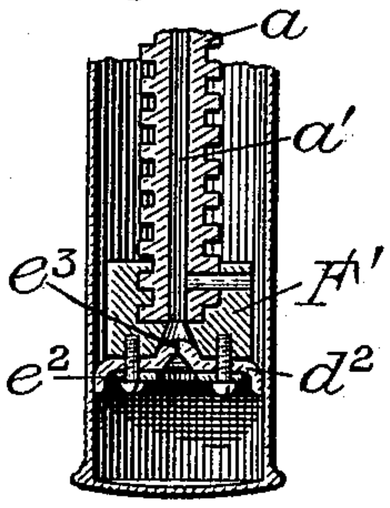


Fig. 5.



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UNITED STATES PATENT OFFICE.

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BICYCLER'S TOOL.

SPECIFICATION forming part of Letters Patent No. 544,726, dated August 20, 1895.

Application filed April 9, 1895. Serial No. 545,050. (No model.)

To all whom it may concern:

Be it known that I, ROBERT CROZIER FAWCETT, of Carrollton, in the county of Carroll and State of Ohio, have invented certain new and useful Improvements in Bicyclers' Tools; and I do hereby declare that the following specification, taken in connection with the drawings furnished and forming a part of the same is a clear, true, and complete description of my invention.

A tool embodying my invention is adapted to perform the double duty of a monkey-wrench and an air-pump, and although tools having said capacities have been heretofore devised I have sought to simplify and economize in construction, and also to provide for strength, compactness, light weight, and specially reliable and convenient operation.

In the use of my novel implement as a pump the charging-tube couples the head of the wrench with the bicycle-tire, and when a long tube is used said head serves as the base of the pump and can be firmly grasped by and conveniently held in one hand of the operator. If a long flexible charging-tube is used, or a short one, it can pass between his fingers or, in either case, the head of the wrench may be firmly clamped by his hand against an adjacent solid portion of the rim of a wheel, or said head may be directly coupled to such rigid metal tubes as are employed in many machines. The handle of the wrench consists of a tail-piece, usually a screw-threaded shank, secured to or integral with the outer jaw, and in one form of my device an inclosing-cylinder in its simplest form is concentrically mounted on said shank. Said cylinder serves also as the barrel of the air-pump, and the shank serves as a hollow or tubular piston-rod. The cylinder at its front end has an interior collar, which serves as a guide-bearing on the shank, and the latter at its end carries a suitable piston which, as well as said collar, serves as a radial support for the cylinder with reference to the shank when the tool is used as a wrench. The cylinder at its front end is provided with a rotatively-coupled screw-threaded sleeve, and a portion of the wrench-nut is threaded for the reception of said sleeve, so that said nut performs not only all of the usual functions of a wrench-nut, but also serves as a part of a union-joint for firmly coupling the cylinder to the wrench-head.

A slightly more expensive and very effective form of my device embodies a sectional cylinder which by its telescopic movement, as in all such pumps, enables a long and effective stroke; but this cylinder, like the simple cylinder in the form of my device previously referred to, is locked by the wrench-nut, and the two forms of tool may be precisely alike in external dimensions and appearance.

To more particularly describe my invention I will refer to the accompanying drawings, in which—

Figure 1 illustrates in side view an implement or tool embodying my invention. Fig. 2 illustrates said tool in its simplest form in section and with the jaws open for use as a wrench. Fig. 3 illustrates said tool with the jaws closed and the cylinder uncoupled, as when the tool is to be used as an air-pump. Fig. 4 is a sectional view of that form of my device which embodies a sectional or telescopic cylinder. Fig. 5 illustrates a modification of the piston which is provided with a combined piston-packing and check-valve.

I will first describe the form of tool shown in Figs. 1, 2, and 3. The outer jaw A of the wrench-head has a tail-piece, usually a screw-threaded shank *a*, preferably flat on one or two sides, and which in my wrench is tubular, thus affording an air-duct *a'*, extending throughout its length and opening at the center of the head, where a screw connection at a^2, is provided for coupling with either a threaded collar or a nozzle in making connections with the usual pneumatic-tire-charging tubes or pipes. The inner jaw B is mounted upon the rectangular or squared neck of the shank *a*, and is coupled thereto by the wrench-nut C in a manner well known, but said nut is novel in having at one end, as at *b*, a screw-threaded neck, which is engaged by an internally screw-threaded sleeve D, which in turn is freely coupled rotatively to the cylinder E, these parts being so united, as shown in Figs. 1 and 2, when the tool is to be used as a wrench. At the inner end of the cylinder there is a screw-threaded collar *c*, which affords an outside rim for engagement by the sleeve D, and at the end of the shank *a* there is a piston F, so that when used as a wrench

the cylinder, as a part of the handle, is firmly supported radially at both ends by or upon the shank. The peripheries of the nut and sleeve D are milled for facilitating the opening and closing of the jaws, as well as for the convenient union and separation of the nut and sleeve.

When the tool is to be used as an air-pump, the jaws are closed and the cylinder uncoupled from the nut C, as shown in Fig. 3. The piston F is provided with a suitable gasket or packing *d*, which is secured in position by a clamping disk or nut *e* to the end of the shank *a*. In this instance the packing is a cup-shaped disk of leather, rubber, or other suitable material, and it snugly fits the interior of the cylinder. The body of the piston does not tightly fit the cylinder, and the clamping-disk is smaller than the packing-disk, so that when the cylinder is moving outwardly air may properly enter around the piston, but when the cylinder is making a forcing-stroke the packing makes an air-tight contact with the cylinder. Although the collar *c* at the inner end of the cylinder has its bearing upon the screw-thread of the shank *a* and serves as a guide-bearing, ample induction of air is afforded by way of the space always open between the collar and the bottom of the screw-thread convolutions, even when the shank is round, and when, as is preferable, said shank is flat on one or two sides, as is common in wrenches, the collar *c*, having an opening which conforms thereto, renders the cylinder non-rotative with reference to the shank.

Referring now to the sectional-cylinder tool of Fig. 4, it will be seen that it embodies the several parts of the wrench portion of the organization already described, and hence like letters of reference have been applied to said parts. This cylinder E′ is composed of two tubular telescoped sections, the outer section *f* being slidably mounted upon the inner section *f′* and the latter being in turn slidably mounted on the piston F and on the hollow shank or stem *a*, and having at its inner end a screw-threaded guide-bearing *c′*, which performs the guiding function of the collar *c* used in the simple cylinder-tool. At the opposite or outer end of the inner section *f′* there is an air-port a^3 and a packing *d′*, so that this section operates as a piston with reference to the outer section *f*, this latter being guided and radially supported on the inner section, the outer section having at its inner end a screw-threaded collar c^2, which serves as a guide-bearing with relation to the inner section, and also co-operating with the threaded sleeve D for firmly locking the cylinder to the wrench-nut, as in Fig. 2.

The pumping portion of the tool may or may not be provided with a check-valve, this being deemed by many to be of little consequence when a bicycle-tire contains a check-valve or an equivalent device. In Fig. 5, however, I illustrate a piston F′, which is tapped to and pinned upon the end of the shank *a* and provided with a packing d^2, which is molded in the well-known cup-shaped form and is secured in position by means of an annular plate e^2 and screws or pins. At the center of this packing there is a rearward projection slitted, as at e^3, which operates as a check-valve, because it so occupies the entrance to the air-duct *a′* that air may freely pass inwardly to the duct during the compressing action of the cylinder, but is closed against reflex action by the resiliency of the material and by the air-pressure within the duct.

It will be seen that the tool in either of the forms shown and described is simple and quite inexpensive in its construction, is compact and capable of being made of requisite strength, with no undue weight in metal, and that it can be conveniently operated with reliable efficiency.

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

1. A bicycle tool adapted for use as a wrench and as an air pump, embodying in combination substantially as described, a wrench provided with a tubular shank, and with a suitable pipe connection at the head of the wrench; a piston on said shank; a cylinder inclosing the shank, and radially supported thereon by a suitable guide bearing and said piston; a wrench nut, and a screw coupling for detachably uniting the cylinder to the wrench head, and enabling said cylinder to be used either as a wrench handle, or as an air pump cylinder.

2. In a combined wrench and air pump, the combination substantially as described, of a tubular shank serving as a tail piece for the jaws of the wrench, also as a piston rod, and also as an air duct; a suitable piston on said shank, and a cylinder detachably secured to the wrench head, and serving as a pump barrel when detached, and as a handle to the wrench when secured.

3. In a combined wrench and air pump, the combination with a wrench head, and a cylinder serving as a handle and as a pump barrel, of a wrench nut, and a sleeve rotatively mounted at one end of the cylinder, and screw coupled to the wrench nut, substantially as described.

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Witnesses:
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