

No. 636,118.

Patented Oct. 31, 1899.

F. H. DEKNATEL & C. J. SPRUCE.

BICYCLE PUMP.

(Application filed Jan. 28, 1899.)

(No Model.)

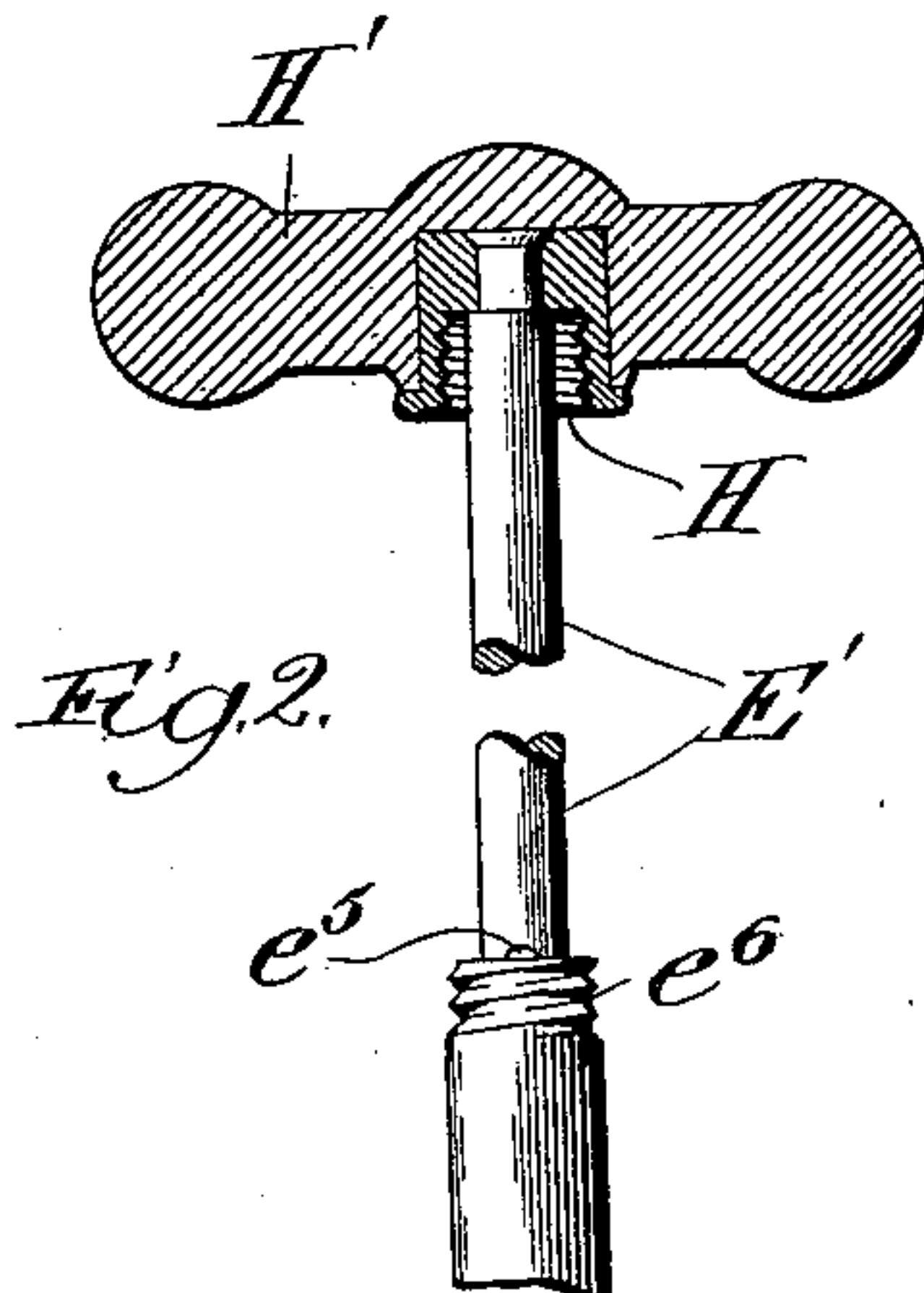
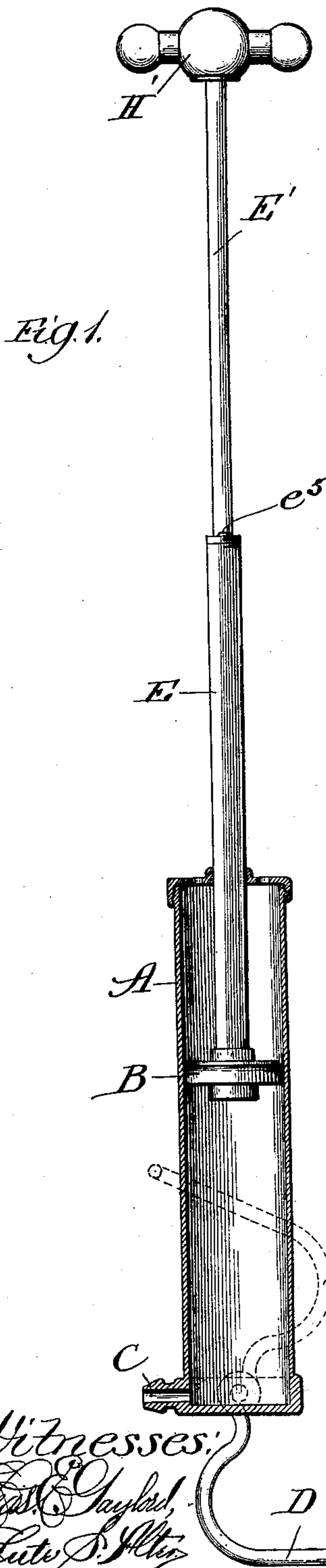


Fig. 3.

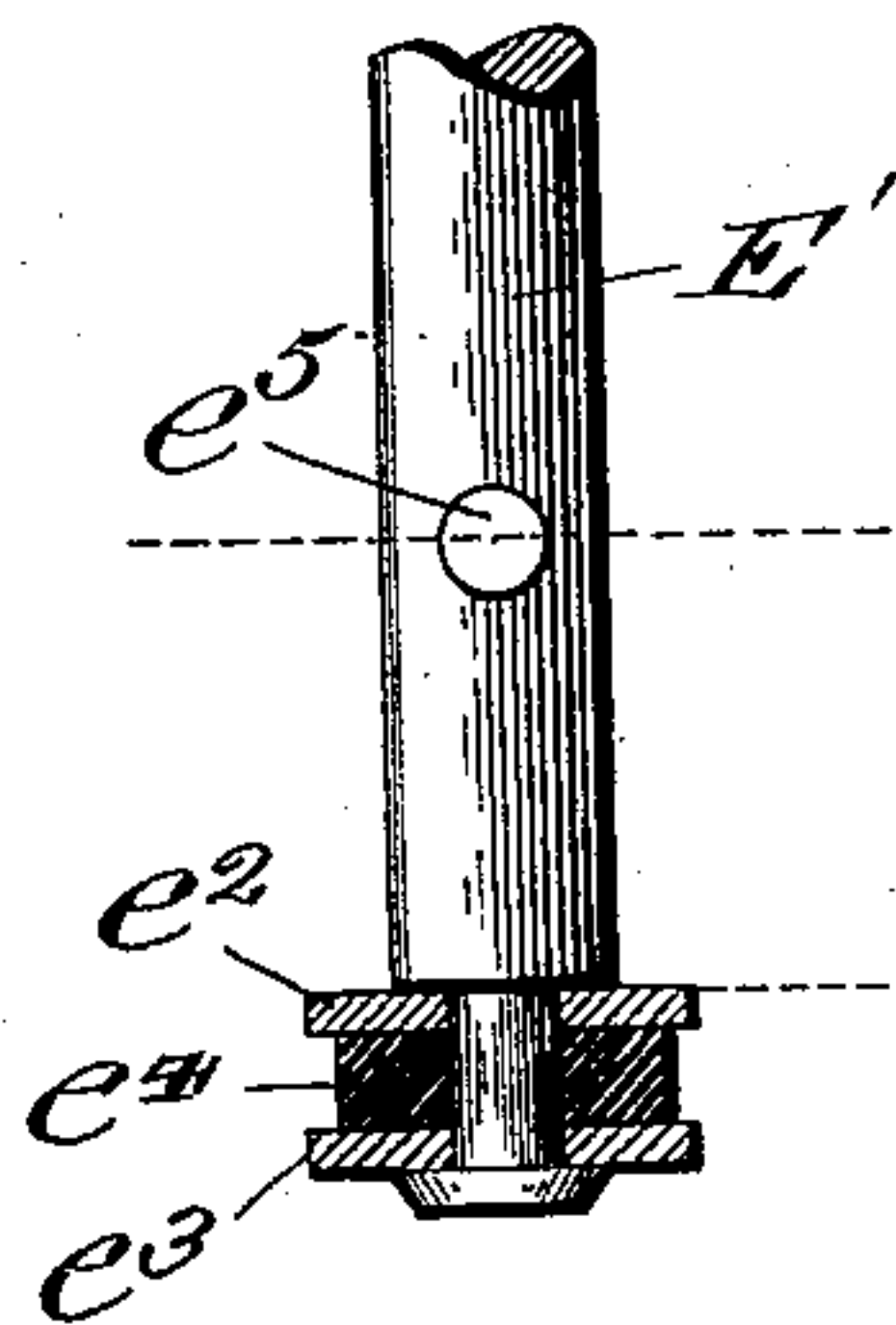


Fig. 4.

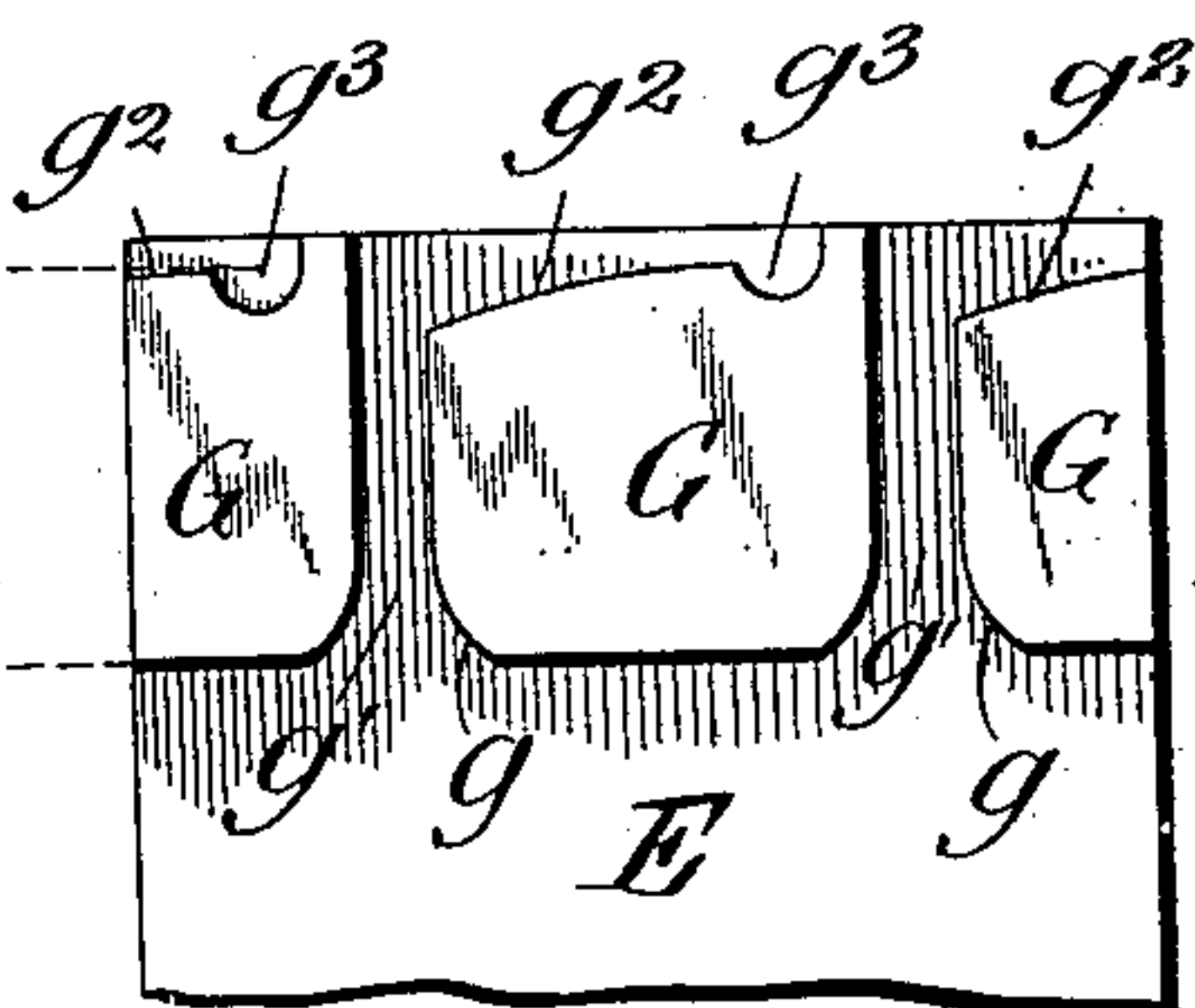


Fig. 5.

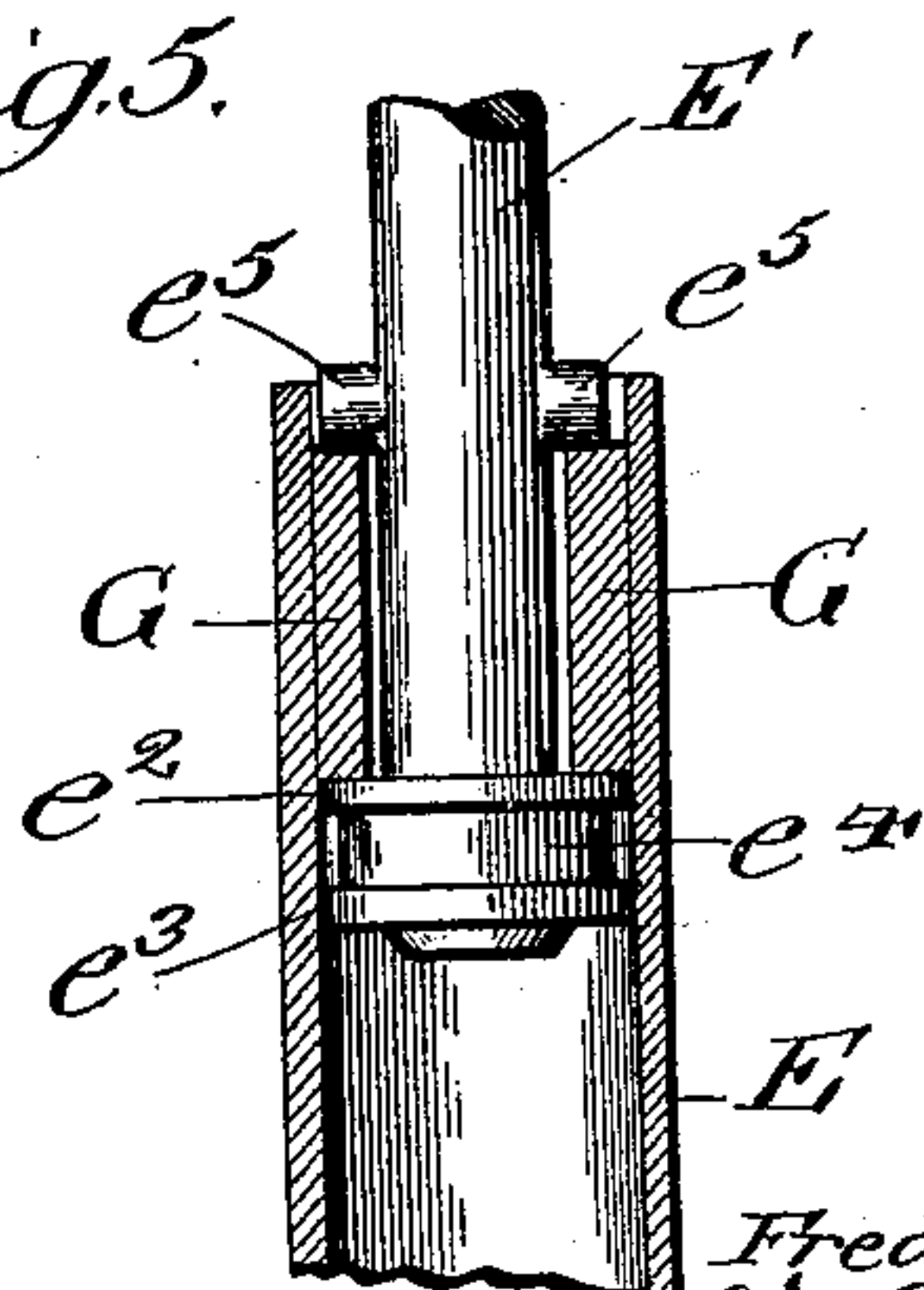
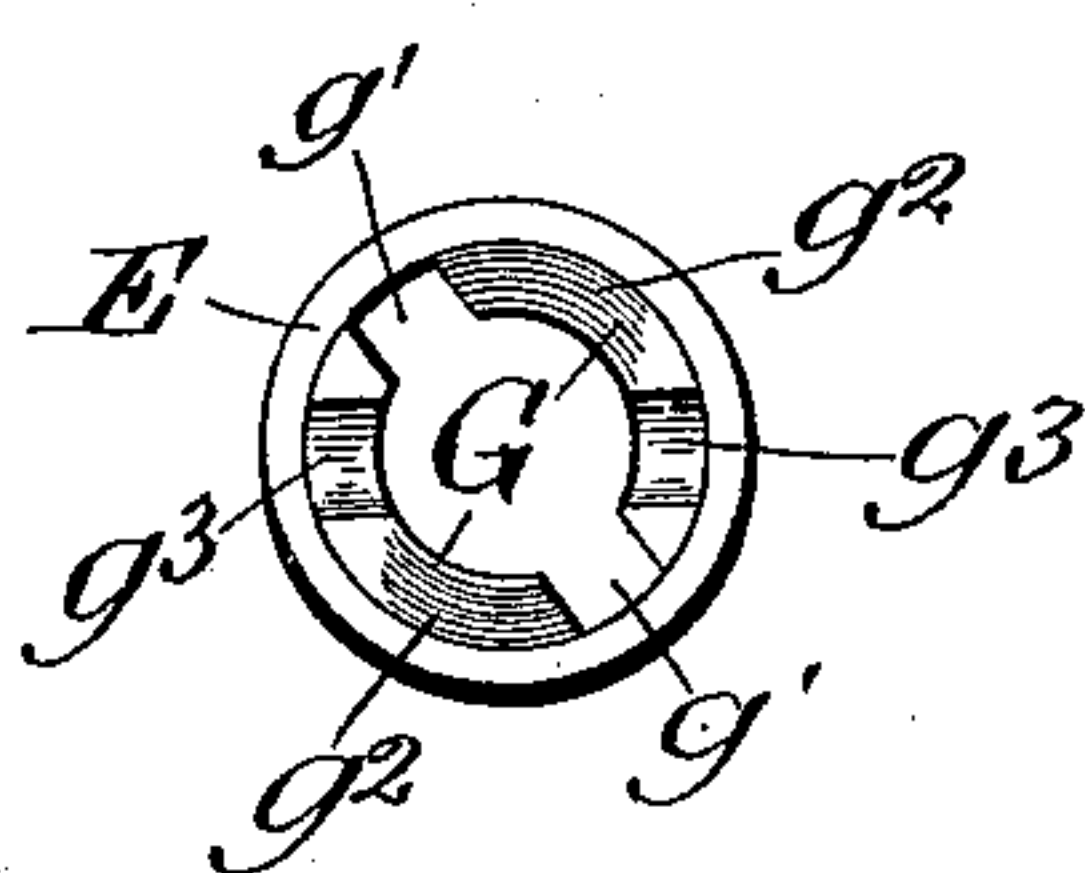


Fig. 6.



Witnesses:

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UNITED STATES PATENT OFFICE.

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BICYCLE-PUMP.

SPECIFICATION forming part of Letters Patent No. 636,118, dated October 31, 1899.

Application filed January 28, 1899. Serial No. 703,702. (No model.)

To all whom it may concern:

Be it known that we, FREDERICK H. DEKNATEL, residing at Chicago, and CLIFFORD J. SPRUCE, residing at Austin, in the county of Cook and State of Illinois, citizens of the United States, have invented certain new and useful Improvements in Bicycle-Pumps, of which the following is a specification.

This invention relates to that class of pumps which is used for compressing air and forcing it into an inflatable vehicle-tire, and has for its object the providing of a simple, economical, and efficient combined hand and foot pump.

A further object of the invention is to provide a bicycle-pump portable in its nature, composed of a compressing-cylinder and movable piston with an extensible and collapsible piston-rod, and means for operatively holding the rod in its collapsed and extended condition.

Further objects of the invention will appear from an examination of the drawings and the following description and claims.

The invention consists principally in the combination of a cylinder, a movable piston therein, an extensible and collapsible piston-rod secured to the piston, and means for operatively holding the piston-rod in its extended and collapsed conditions.

It consists, further and finally, in the features, combinations, and details of construction hereinafter described and claimed.

In the accompanying drawings, Figure 1 is sectional elevation of a complete pump constructed in accordance with our improvements; Fig. 2, a full-sized broken sectional elevation of the upper part of the collapsible piston-rod; Fig. 3, a similar view of the lower part; Fig. 4, a "developed" surface view of the inner portion of the upper part of the tubular piston-rod; Fig. 5, a sectional elevation of the upper part of the lower portion of the piston-rod and the lower part of the upper portion of the piston-rod, showing the means for operatively holding them together in their extended condition; and Fig. 6, a plan view of the upper part of the tubular portion of the piston-rod.

In the art to which this invention relates it

is well known that a "foot-pump" is most desirable for the purpose of inflating a bicycle or other vehicle-tire, but that owing to its size it is heavy and cumbersome to handle and practically impossible to carry in the tool-bag, and consequently that the small hand-pump is the usual one carried by cycling tourists.

In constructing a bicycle-pump in accordance with our improvements we use a cylinder A, provided with a reciprocating piston B, which during its reciprocations compresses the air between it and the walls of the cylinder. This cylinder is provided with an outlet-tube C, which may be connected in any usual manner with the valve of a bicycle-tire for the purpose of confining and guiding compressed air from the compressing-chamber of the pump to the tire. To use the tire with the foot, a stirrup D is provided, which is preferably pivotally secured to the cylinder.

It is highly desirable to provide this pump with a piston-rod, whereby it may be used either by hand alone or in combination with the hand and foot. In order to accomplish this result, we make a collapsible and extensible piston-rod in two parts E and E'. E is a tubular part, which is rigidly secured to the movable piston and which at its upper end and on the inside is provided with two semicylindrical shells G, curved at their lower parts at g and separated to such an extent as to provide diametrically-opposed channels g' . The upper part of these semicylindrical shells are cam-shaped, as at g^2 , and provided with locking-recesses g^3 , the purpose of which will more fully hereinafter appear. The portion E' of the piston-rod may be either tubular or solid and is inserted telescopically in the lower tubular part and provided with cushioned washers formed of the upper and lower rings e^2 and e^3 and the interposed cushion e^6 , preferably formed of rubber. A pin e^5 is inserted diametrically through the lower part of the upper portion of the piston-rod, though it may be lugs formed integrally therewith, so that it may pass through the channel between the semicylindrical shells and be turned at right angles, so as to ride on the upper cam-like surface and engage with the

locking-notches, thereby operatively holding the piston-rod in its extended condition. To hold it in its collapsed condition, the exterior of the lower tubular portion is provided with
 5 an outer threaded portion e^6 , adapted to engage with the threaded recess H in the handle H' when the parts are in their collapsed condition and operatively hold them in such condition.

10 In operation when it is desired to use the pump by hand alone the stirrup is folded back against the cylinder (see dotted outline, Fig. 1) and the air-tube connected with the tire. The piston-rod is collapsed and secured together in its collapsed condition, so that the
 15 pump may be used in such condition, which is its smallest. To use it with both hand and foot, the stirrup is swung down so that the foot may rest upon it and the piston-rod extended and operatively secured together in
 20 its extended position, as above outlined, thus permitting the operator or user to use it by hand and foot in its largest condition, and thereby obtain the greatest amount of power.

25 We claim—

1. In a pump of the class described, the combination of a cylinder portion, a piston movably mounted therein, a collapsible and
 30 extensible piston-rod secured to the movable piston, and means for operatively holding the piston-rod in its collapsed and extended condition, substantially as described.

2. In a pump of the class described, the combination of a cylinder, a piston movably
 35 mounted therein, a collapsible and extensible piston-rod secured to the movable piston and made in two parts—a tubular portion and a second portion inserted therein, a lug or lugs extending diametrically out from the second
 40 part and adapted to bear on the end of the tubular portion to operatively hold the piston-rod in its extended condition, and means for operatively holding the piston-rod in its collapsed condition, substantially as described.

45 3. In a pump of the class described, the combination of a cylinder portion, a piston movably mounted therein, a collapsible and extensible piston-rod secured to the movable

piston-rod and formed of two parts—a lower tubular part and an upper part telescopically
 50 inserted in the lower tubular part, two semi-cylindrical shell portions inserted in the upper edge of the tubular portion and providing a longitudinal channel between them, an upper cam-surface and locking-notch in the
 55 semi-cylindrical shells, a cushioned washer on the lower end of the upper part of the piston-rod, a pin, pins or similar element extending diametrically out from the upper portion of the piston-rod, whereby the pin may engage
 60 with the locking-notches in the tubular part of the piston-rod and hold it in its extensible condition, and a handle provided with means adapted to engage the tubular portion and lock and operatively hold the piston-rod in
 65 its collapsible condition, substantially as described.

4. In a pump of the class described, the combination of a cylinder portion, a piston
 70 movably mounted therein, a collapsible and extensible piston-rod secured to the movable piston-rod and formed of two parts—a lower tubular part and an upper part telescopically inserted in the lower tubular part, two semi-
 75 cylindrical shell portions inserted in the upper edge of the tubular portion and providing a longitudinal channel between them, an upper cam-surface and locking-notch in the semi-cylindrical shells, a cushioned washer on the
 80 lower end of the upper part of the piston-rod, a pin or pins or similar element diametrically extending through the upper portion of the piston-rod, whereby the pin may engage with the locking-notches in the tubular part of the
 85 piston-rod and hold it in its extensible condition, an outer threaded portion on the tubular part, and a handle provided with a threaded portion adapted to engage the outer threads on the tubular portion and lock and operatively
 90 hold the piston-rod in its collapsible condition, substantially as described.

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