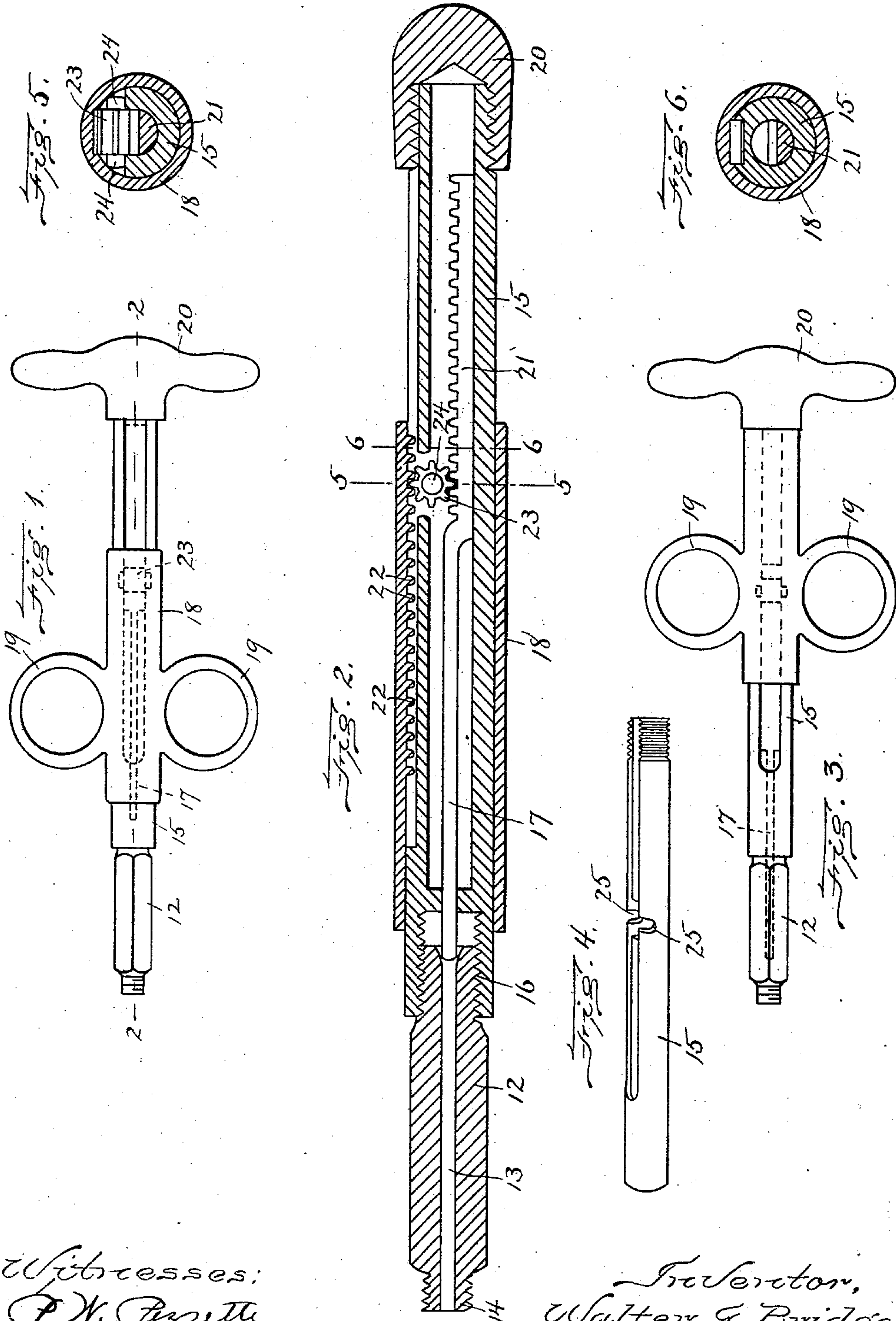


No. 854,399.

PATENTED MAY 21, 1907.

W. G. BRIDGE.
SYRINGE.

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Witnesses:
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UNITED STATES PATENT OFFICE.

WALTER G. BRIDGE, OF BOSTON, MASSACHUSETTS.

SYRINGE.

No. 854,399.

Specification of Letters Patent.

Patented May 21, 1907.

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To all whom it may concern:

Be it known that I, WALTER G. BRIDGE, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Syringes, of which the following is a specification.

This invention relates particularly to syringes used for forcing small quantities of liquid through a contracted outlet, and it has particular reference to dental syringes for forcing liquid into the dentin or soft tissue, although the invention is capable of being embodied in other types of syringes.

The invention has for its object to provide a syringe adapted to be conveniently held and manipulated entirely by one hand of the operator, the manipulation being effected by the contraction of the operator's hand, between the palm and fingers of which the instrument is held.

The invention consists in the improvements which I will now proceed to describe and claim.

Of the accompanying drawings forming a part of this specification,—Figure 1 represents a side view of a syringe embodying my invention, the plunger of the syringe being retracted. Fig. 2 represents an enlarged section on line 2—2 of Fig. 1. Fig. 3 represents a view similar to Fig. 1, showing the plunger projected. Fig. 4 represents a perspective view of the part hereinafter termed the extension of the syringe barrel. Fig. 5 represents a section on line 5—5 of Fig. 2. Fig. 6 represents a section on line 6—6 of Fig. 2.

The same letters of reference indicate the same parts in all the figures.

In the drawings, 12 represents the barrel or cylinder of a syringe, provided with a liquid-holding chamber 13, terminating in a discharge nozzle 14, which is, or may be, externally screw-threaded, to engage an extension or needle. The barrel is extended from the end opposite the nozzle 14, the extension 15 being preferably formed in a separate piece, and having a screw-thread connection at 16 with the chamber portion of the barrel.

17 represents the plunger, which is adapted to be reciprocated in the chamber 13.

18 represents a piston-operating member, which is movable upon the extension 15, and is preferably formed as a sleeve surrounding the extension, and adapted to slide thereon. The operating member 18 is provided with means adapted to be engaged by one or more

parts of the operator's hand, the means here shown comprising two finger-receiving loops 19 projecting from opposite sides of the member 18.

The extension 15 is provided with means for engaging another part of the operator's hand, the means here shown being a head 20, formed to bear upon the palm of the operator's hand, the proportions of the instrument being such that when the head 20 bears on or engages the palm, two of the fingers of the same hand may conveniently engage the loops 19, so that when the hand is contracted, the member 18 will be moved toward the head 20.

Means are provided for imparting reverse movement from the operating member 18 to the plunger 17; that is to say, when the member 18 is moved in either direction, the plunger is moved in the opposite direction, so that when the member 18 is moved toward the head 20 by the contraction of the operator's hand, the plunger will be projected, an opposite movement of the member 18 causing the retraction of the plunger. The preferred means for accomplishing this result are as follows: The plunger 17 is provided with a shank or extension, formed as a rack 21, which is movable in an elongated cavity in the extension 15. The operating member 18 is provided on its interior with a series of gear teeth 22, forming a rack, which is opposed to, or faces, the rack 21, the two racks being separated by an intervening space of sufficient width to receive a pinion 23. The said pinion is provided with trunnions 24, which are journaled in bearings 25 in the extension 15. As will be seen by reference to Fig. 2, the pinion 23 meshes with the two racks, so that when the operating member is moved in either direction, movement in the opposite direction is imparted through the racks and pinion to the plunger.

It will be seen that the described construction enables the plunger to be projected wholly by the movement of the fingers toward the palm of the operator's hand. It has been found that this improved syringe is adapted to be manipulated with greater convenience to the operator than the ordinary type of syringe, and with greater steadiness and accuracy, because the delivering needle or nozzle and the head or handle 20 are always at the same distance apart, hence there is no liability of unsteady or involun-

tary motion of the point when the liquid is being ejected.

I claim:—

1. A syringe comprising a barrel, a plunger
5 movable therein, an operating member movable on the barrel, and means for imparting reverse movement from the operating member to the plunger, the said barrel and operating member having means for engaging
10 different parts of an operator's hand, whereby one hand is enabled to operate the syringe.

2. A syringe comprising a barrel, a plunger
movable therein, an operating member movable on the barrel, said plunger and operating member having opposed racks, and a
15 pinion interposed between and meshing with

said racks, whereby reverse movement is imparted from the operating member to the plunger.

3. A syringe comprising a barrel having an extension, a plunger having a shank formed as a rack movable in said extension, an operating member formed as a sleeve surrounding and movable on the barrel extension, and
25 provided with an internal rack, and a pinion journaled in bearings in the extension and meshing with said racks.

In testimony whereof I have affixed my signature, in presence of two witnesses.

WALTER G. BRIDGE.

Witnesses:

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