

R. E. INGALLS.
HYPODERMIC SYRINGE.
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1,105,275.

Patented July 28, 1914.

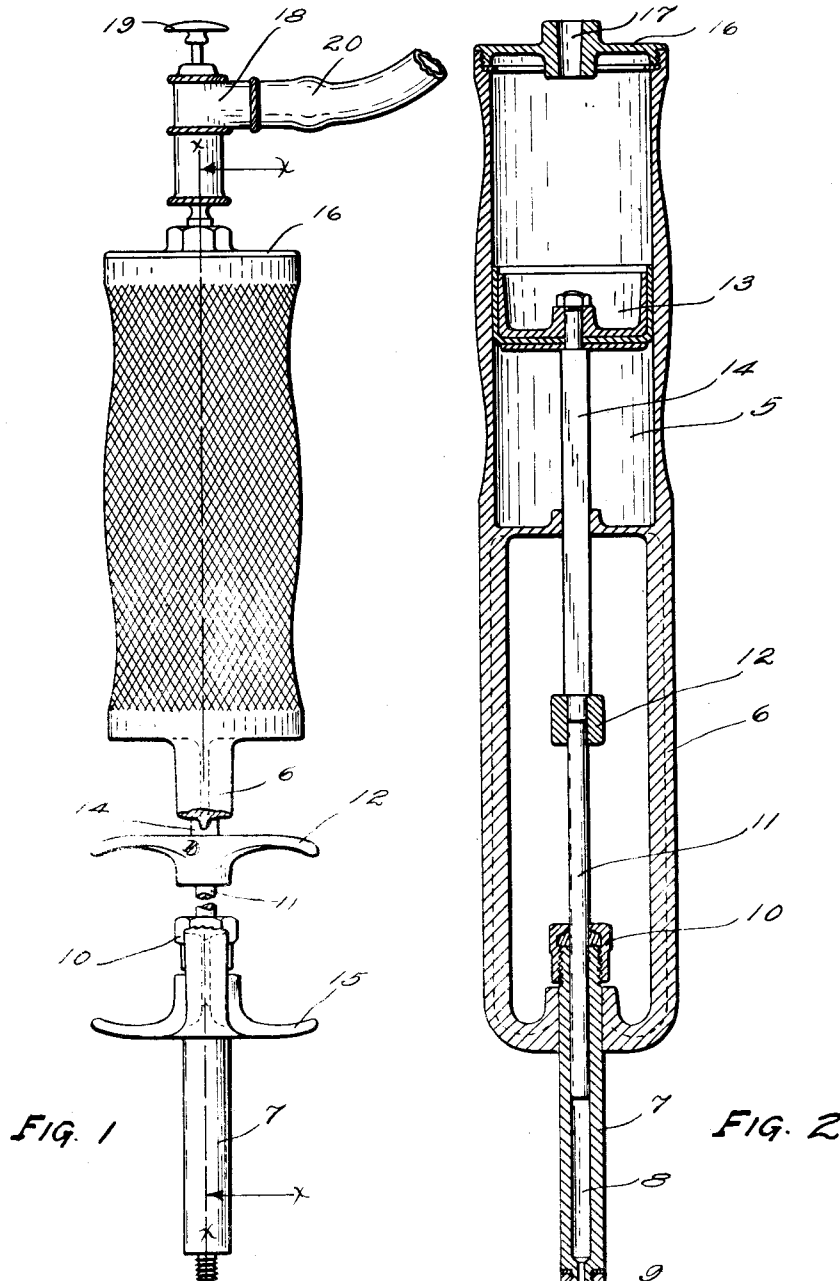


FIG. 1

FIG. 2

WITNESSES:

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HYPODERMIC SYRINGE.

1,105,275.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, RAYMOND E. INGALLS, citizen of the United States, residing at Seattle, in the county of King and State of Washington, have invented a certain new and useful Improvement in Hypodermic Syringes, of which the following is a specification.

My invention relates to improvements in syringes and more particularly to improvements in syringes or obtunders adapted for administering medicine hypodermically to produce obtundity in the part of the body treated, and the object of my improvement is to provide a reliable and conveniently shaped obtunder adapted to be actuated by compressed air to administer hypodermic injection and one in which the liquid may be ejected from the needle under high pressure. I attain this object by devices illustrated in the accompanying drawings, in which—

Figure 1, is a view in side elevation of a device embodying my invention, and Fig. 2, is a view in vertical-section on broken line *x, x* of Fig. 1.

Referring to the drawings, 5 is the cylinder of an obtunding syringe which syringe is adapted to be actuated by compressed air.

6 is a form of bracket integrally associated with said cylinder 5 to project from one end thereof with which brackets 6 is associated a tube 7 that is fixed in its outer end. The outer end of the tube 7 is provided with a threaded nipple which is adapted to engage with the internal thread of an obtunding needle 9, as shown in Fig. 2, whereby liquid may find passageway from the tube chamber 8 within the tube 7 through said nipple and said needle 9. The inner end of said tube 7 is provided with a stuffing box 10 through which a cylindrical plunger 11 may move to force liquid out of or suck liquid into the tube chamber 8. That end of the cylindrical plunger 11, that extends upwardly and outwardly through the stuffing box 10, is provided with a finger-hold 12 by which the plunger 11 may be moved to suck fluid into the tube chamber 8 in an obvious manner and such finger-hold 12 by its hub also serves to connect the plunger 11 with a piston-rod 14 to the upper end of which is a fixed piston 13 which is adapted to be moved upwardly within the cylinder 5 by motion communicated by one's hand through the finger-hold 12 and which is further adapted to be moved downwardly

by the pressure of compressed air which may be admitted into the upper end of said cylinder 5 through a passageway 17 in the cylinder head 16 shown in Fig. 2, said passageway 17 being in communication with a source of compressed air, not shown, by means of a flexible tube 20 to which is attached a removable controlling valve 18, as shown in Fig. 1, which is provided with a valve-stem 19 that is adapted to be operated by the pressure of one's finger whereby when the valve-stem 19 is depressed compressed air may flow from the flexible tube 20 through the valve 18 and through the passageway 17 into the cylinder 5 to force downwardly the piston 13 and the plunger 11 and thus forcibly to eject fluid that may be contained in the tube chamber 8 such fluid being emitted through the obtunding needle 9. The lower end of the bracket 6 is provided with a finger-hold 15 of a shape resembling the shape of the finger-hold 12 which is adapted to facilitate manipulation, and the exterior surface of the cylinder 5, which is of a convenient form for handling, is roughened or milled to adapt it to be held by the hand more securely.

In the operation of my device the plunger 11 being disposed with its end at the bottom of the tube chamber 8 the obtunding needle 9 is inserted beneath the surface of the liquid to be used whereupon the desired amount of such liquid may be sucked into the tube chamber 8 by manipulating the finger-hold 12 to raise the plunger 11 to a required extent. When the injection is to be made the operator inserts the obtunding needle 9 into the parts to be operated upon whereupon he depresses the valve-stem 19 to open the valve 18 to admit a pressure of air from the tube 20 into the upper part of the cylinder 5 to force the piston 13 downwardly. In response to the downward movement of the piston 13 the plunger 11 is driven toward the needle 9 to force with great pressure the liquid contained in the tube chamber 8 to flow through said needle 9 into the part operated upon, thus, the plunger 11 is moved without expenditure of any physical force by the operator.

The structure shown and described is especially adapted for use in dentistry when it is desired to apply an obtundent to the gums or teeth of a patient to obviate pain. Manifestly, my invention may be employed in other branches of surgery or under con-

ditions where it is desired to dispense with the physical force of an operator for actuating the plunger of a syringe.

Of course, modifications may be made in form and dimensions of various parts of a structure containing my invention without departing from the spirit thereof.

What I claim is:

1. In a device of the class described, the combination with a hollow cylinder, of a piston disposed within said cylinder, of a piston rod attached to said piston, a valve-controlled passage-way to admit fluid under pressure into said cylinder, a bracket associated with one end of said cylinder, said bracket comprising a pair of oppositely-disposed arms of a length substantially equal to the length of said cylinder, a finger hold formed on the lower end of said bracket, a smaller cylinder associated with the lower end of said bracket, a plunger disposed to reciprocate within said smaller cylinder, a second finger hold constituting a connection between the piston rod and the plunger, and a perforated needle provided on the outer end of said smaller cylinder.

2. In a device of the class described, the combination with a bored cylinder provided with suitable heads, of a piston disposed within said cylinder and adapted to be moved therein, a piston rod attached to said piston and arranged to extend outwardly through the lower head of said cylinder, controllable means for admitting compressed

air into said cylinder through the upper end thereof, an extension bracket fixed to that end of said cylinder through which said piston rod projects outwardly, and a hypodermic syringe secured to the other end of said bracket, said syringe comprising a small cylinder, a plunger rod movable within said small cylinder and connected with said piston rod whereby movement of said piston shall cause movement of said plunger rod, and a finger hold associated with said plunger rod whereby said plunger rod may be moved.

3. In a device of the class described, a frame comprising a pair of oppositely-arranged side bars, a cylinder of large diameter carried by the upper end of said frame, a cylinder of small diameter carried by the lower ends of said frame, a piston disposed within said large cylinder, a piston rod adapted to project through the lower end of said cylinder, a plunger rod disposed within said small cylinder and connected with said piston rod, a finger hold associated with both said piston rod and said plunger rod, and a valve controlled passage-way to admit fluid under pressure into said large cylinder.

In witness whereof, I hereunto subscribe my name this 10th day of May A. D. 1913.

RAYMOND E. INGALLS.

Witnesses:

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F. C. MATHENY.