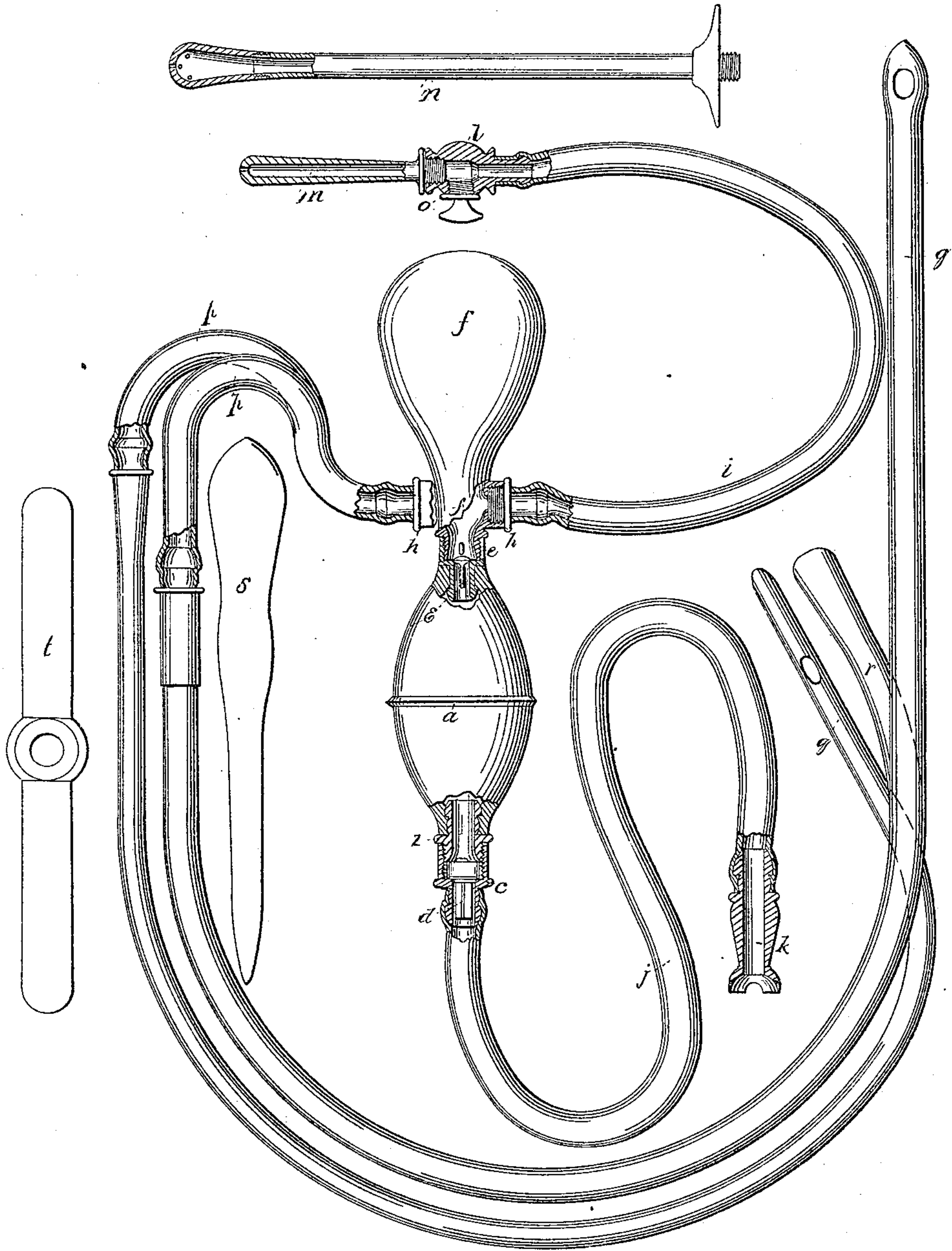


J. J. Essex,

Syringe.

N^o 25,186.

Patented Aug. 23, 1859.



Witnesses
J. B. Crosby
W. B. Gleason

Inventor
James J. Essex

UNITED STATES PATENT OFFICE.

JAMES J. ESSEX, OF NEWPORT, RHODE ISLAND.

ELASTIC BULB SYRINGE.

Specification of Letters Patent No. 25,186, dated August 23, 1859.

To all whom it may concern:

Be it known that I, JAMES J. ESSEX, of the city and county of Newport, in the State of Rhode Island, have invented a new Combination with Syringes Having Elastic Bulbs Which are Operated by Compression and Expansion; and I do hereby declare that the following is a clear, full, and exact description thereof, sufficient to enable those skilled in the art to practice my invention, reference being had to the accompanying drawings, forming a part of this specification, in which similar letters refer to similar parts.

The nature of my invention consists in combining with the elastic bulb of a syringe, designed to be operated by the compression and expansion of the hand, an air chamber in such a manner that it shall be under the control of the hand which grasps the bulb with which the air chamber is connected and so be kept upright or nearly so in operation without which the chamber would fail to operate as an air chamber for regulating the pulsations or jets of the stream passing through the syringe.

The elastic bulb syringe is now used for a very great variety of purposes, among which, besides the ordinary one as an enema syringe, may be noticed use as a stomach pump, both in filling and emptying the stomach, and its use in inflating pessaries, or creating a vacuum, as in dry cupping and in drawing breasts. In some of the varied operations which are performed, wholly or in part, by the use of the elastic bulb syringe with its various connections, the jets or pulsations of the current produced are the cause of painful and nervous sensations, to obviate which, by so arranging the chamber (*f*) that it will always act as an air chamber without extra attention in producing a steady stream without jets, is the object of my invention.

To produce a steady stream has been sought to be attained by introducing in the delivery pipe, beyond the delivery valve and the bulb, upon which the hand operates, a sack of thin rubber, intended to act as an expansible reservoir and to produce a steady and uniform flow of the stream passing through the instrument by expanding when the pressure of the hand was strong, and contracting when it relaxed. This arrangement however failed in practical use, prin-

cipally on account of the bursting of the sack.

The syringe to which I shall refer in describing the construction and operation of my invention is that patented to C. H. Davidson March 31st 1857, although I wish to be understood that I do not confine my combination to that particular elastic bulb syringe.

The elastic bulb is (*a*), in which the metallic part (*b*) is confined by the elasticity of the rubber. The suction valve box (*c*) screws upon (*b*), and contains the valve (*d*) having wings which guide the valve into its seat by fitting in the neck of the valve box (*c*). The delivery valve box (*e*) is held in the bulb as is (*b*), and the air chamber (*f*) is screwed into it. The delivery valve (*g*), and the suction valve (*d*) are kept from rising too far from their seats by checks just above them. The air chamber is provided with a short outlet pipe in which a screw is formed so that the metallic piece (*h*), inserted in the flexible delivery pipe (*i*), can be screwed within it; the threads within this outlet and those within (*e*) are similar, so that when (*f*) is detached from (*a*), (*h*) can be screwed within (*e*), thus forming the Davidson syringe. Portions of the bulb (*a*), air chamber (*f*), and various other parts, are shown in the drawings as removed, exhibiting in section, and in elevation beyond, the construction. The suction pipe (*j*) is of larger bore than the delivering pipe which eases the action of the instrument materially; it is terminated with the metallic piece (*k*) of sufficient weight to sink the pipe in the fluid used.

The pipe (*i*) is provided with a metallic end piece (*l*) into which may be screwed the anal pipe (*m*) or the vaginal pipe (*n*), two, screw threaded orifices being provided for this purpose at right angles to each other; one of these being stopped with a plug (*o*) when the pipes (*m*) or (*n*) are in place. At the left of (*f*), (*h*) is represented as detached from the air chamber, and with a short piece of rubber pipe (*p*) upon it, which serves as a coupling to connect such pipes as may be required to the instrument. A large and small esophageal catheter or tube (*q*), and an anal catheter or tube (*r*), are represented, showing how they may be coupled or connected with (*h*).

As the coupling (*p*) is made of elastic rubber the action of the instrument may readily be reversed by changing the coupling from (*h*) to (*e*). This in cases of stomach poisoning is of importance, as in such cases after the esophageal tube has been introduced into the stomach it may be coupled to the delivery end of the syringe and fluid injected into the stomach, and then, by shifting the coupling to the suction end (*e*), the stomach can be evacuated of its contents, and this process can be repeated until the stomach is cleansed without the necessity of once removing the esophageal catheter, which, and its insertion, causes very disagreeable sensations.

A stomach pump which cannot inject into, as well as draw from, the stomach is defective, because of the injury which is apt to be done the membrane of the stomach by being sucked into the holes of the esophageal tube when the stomach is being too thoroughly evacuated. To avoid this it is necessary to alternately fill and deplete the stomach, and it is also necessary to be expeditious in this.

The rubber coupling (*p*), in connection with the provisions made upon one end of the pipes used and the terminations of the valve boxes, affords facility for instantly changing the action of the instrument upon the esophageal catheter. I find by experiment that the form given to that part of (*e*) over which the elastic tubing is slipped is preferable, as preventing leaks, to that commonly made use of and shown at (*h*).

Although the introduction of the esophageal tube is not attended with serious difficulties it requires judgment and perseverance, and is necessarily attended with some delay, which is the reason why formerly it has been deemed preferable to risk the dangers of injury to the stomach by too great depletion of it rather than those attendant upon the change of esophageal tubes attached to different instruments, each arranged solely for filling or for suction. If the case is attended with lock jaw or if the muscles are rigid it may be necessary to pry the jaws apart by the use of (*s*), and (*t*) is inserted between the teeth and the esophageal tube is passed through it to prevent its being crushed by any convulsive movement of the jaws.

In all the various forms of pessaries capable of inflation the elastic bulb syringe may be used, which dispenses with the necessity of the inconvenient long tubes usually connected with them for the purpose of inflation by blowing from the mouth; the tubes of such pessaries may be stopped by plugs

fitting within their elastic tubes, or any form of stopcock may be inserted in the pessary tubes and suited to connect with the injection pipe of the syringe. The pessary may, by the use of the syringe, be filled with ice cold water, and in such pessaries as have tubes passing through the inflated sack, warm or cold water, or lotions, may be passed by the use of the syringe, for action in the body beyond. In cases requiring such uses of the syringe as those last referred to, the intermittent character of the action of the common elastic bulb syringe is objectionably painful and disagreeable, and in such cases the value of the air chamber in combination and located as described becomes evident.

Although various forms of bulbs and air chambers may be used, I prefer those represented in the drawing; the air chamber must, in all forms and arrangements of it and the bulb, be above the delivery valve (*g*), and the outlet must be below the bulk of the inclosed space, otherwise it will become filled with the passing fluid and will be valueless as an air chamber.

In the "breast pump" patented to O. H. Needham June 20th, 1854, an air chamber is shown attached to the flexible tube connected with the pump. It is evident that this arrangement requires attention in placing and holding the chamber in such a position as to act as an air-chamber and that one hand must be employed in managing the air chamber while the other operates the pump. For if Needham's air-chamber is not placed and sustained in an upright position it will by gravitation assume such a position it will cause it be filled with any liquid which may be passing through the instrument thus destroying its action as an air-chamber. Such an arrangement and combination of the air chamber is not desirable nor do I claim such as my invention.

In those syringes in which elastic bulbs are employed in preference to other varieties of pumps, I claim—

So combining and arranging the bulb, air-chamber, and delivery valve with each other and with flexible suction and delivery tubes, that the air-chamber shall be above the delivery valve and shall be and shall remain while in use, upright or nearly so and under the control of the hand which grasps, and operates, the bulb.

JAMES J. ESSEX.

Witnesses:

J. B. CROSBY,

WM. B. GLEASON.