

No. 635,232.

Patented Oct. 17, 1899.

C. CARROLL.  
BREATHING TUBE.

(Application filed Feb. 16, 1899.)

(No Model.)

Fig. 1.

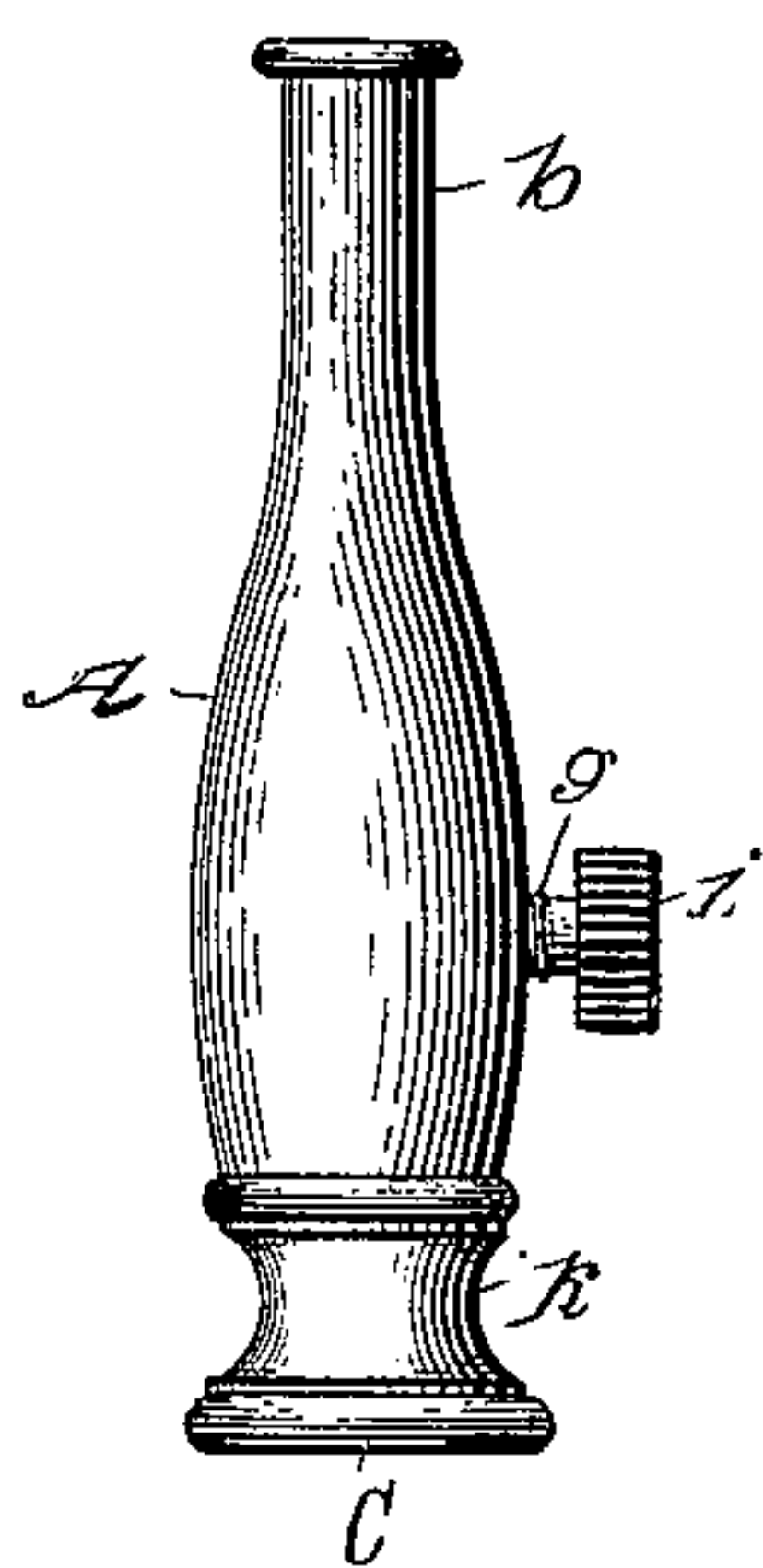


Fig. 2.

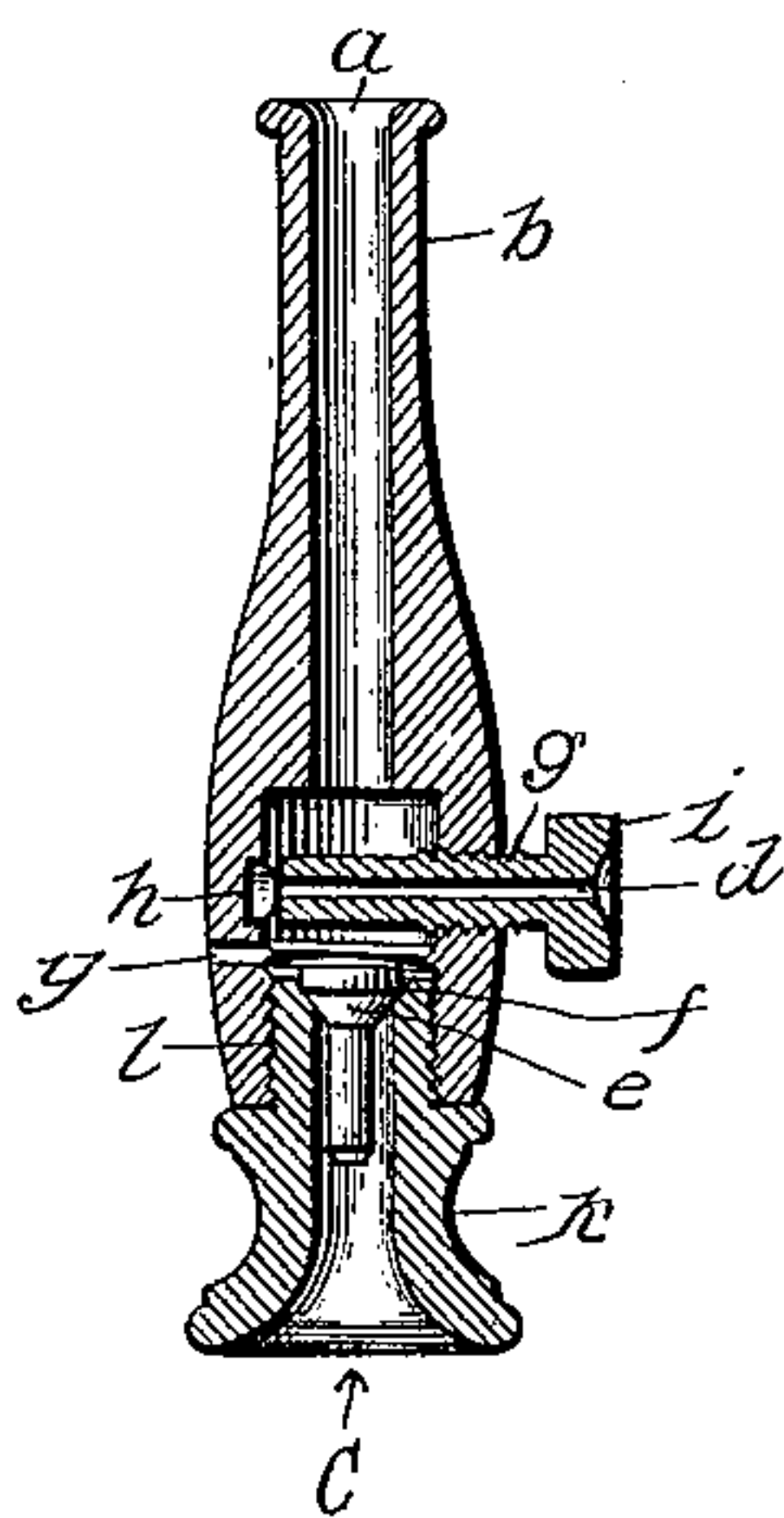
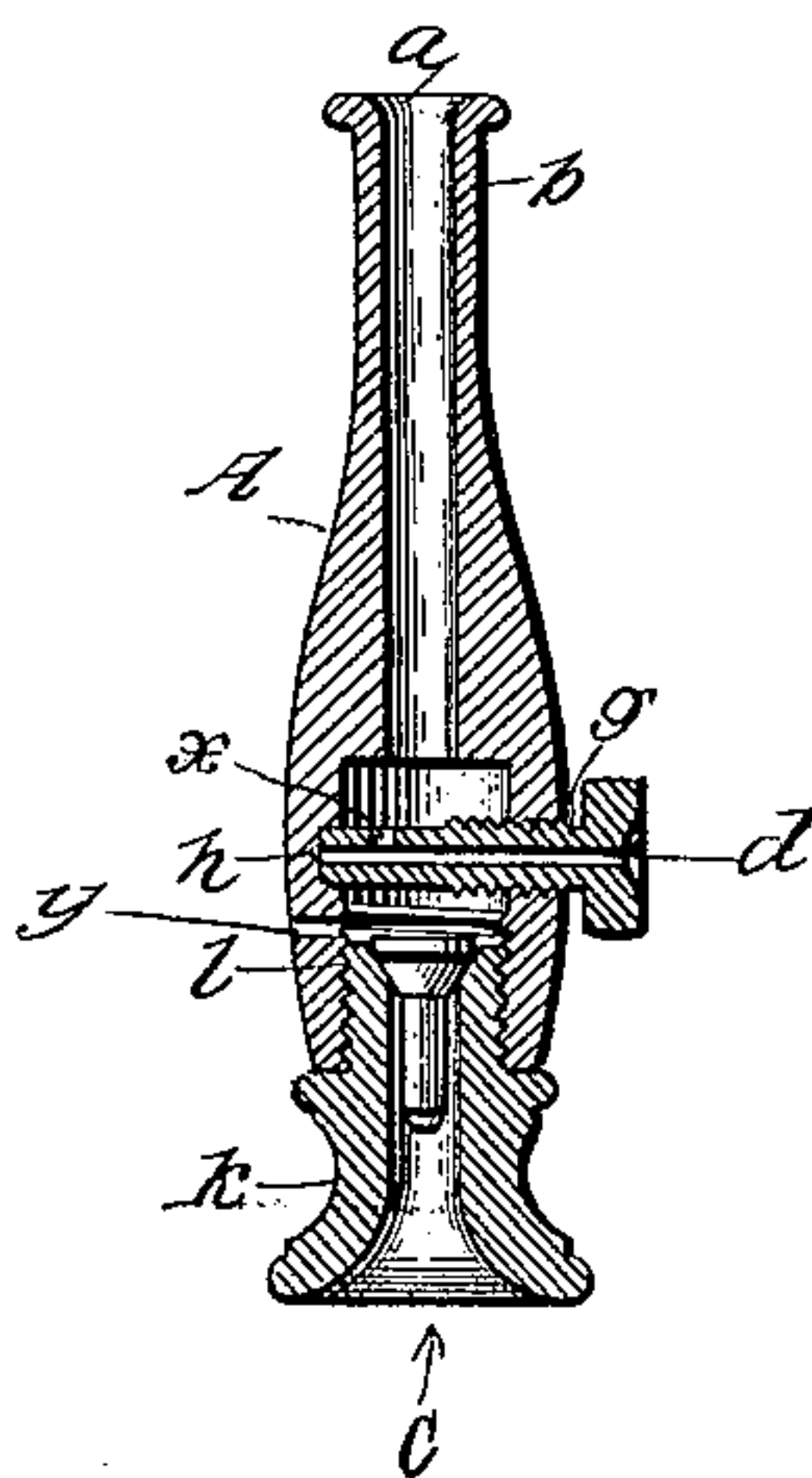


Fig. 3.



WITNESSES:

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## BREATHING-TUBE.

SPECIFICATION forming part of Letters Patent No. 635,232, dated October 17, 1899.

Application filed February 16, 1899. Serial No. 705,706. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES CARROLL, a citizen of the United States, and a resident of New Orleans, in the parish of Orleans and State of Louisiana, have invented certain new and useful Improvements in Breathing-Tubes, of which the following is a specification.

My invention relates to devices employed for developing the lungs, and which consist of a valved tube operating to permit a free inhalation for filling the lungs, but a restricted or retarded exhalation for the purpose of keeping the lungs expanded and gradually allowing contraction.

My invention has for its object to provide means whereby the exhalation may be graduated at the will of the user by manipulation of the article and without necessitating the substitution of its working parts.

My invention accordingly consists in providing a breathing-tube with an exhaling-passage in a part which may be adjusted in the tube to control the area of the passage through which the air is expelled, and in carrying out my invention I employ a breathing-tube having a main bore or passage provided with a valve which opens to permit free inhalation, but which closes under exhalation, and a plug preferably arranged transversely in the tube and having a restricted bore through which the air must escape in exhalation, the plug being adjustable to and from the inner wall of the tube in order to control the escape-passage.

My invention will be fully understood upon reference to the accompanying drawings, in which—

Figures 1 and 2 are respectively an elevation and a longitudinal section of a breathing-tube constructed in accordance with my invention; and Fig. 3 is a view similar to Fig. 2, illustrating a slight modification.

In each of the figures, A represents the tube, which has a longitudinal bore *a* and terminates in a mouthpiece *b*. Air is drawn in through the end *c* and is expelled through a passage *d*, the passage being closed against exhalation by a valve *e*, seating at *f*. The exhaling-passage *d* is formed in an adjustable plug *g*, which is threaded in the side wall of the tube and may be moved to and from its

seat *h* in the opposite inner wall of the tube in order to adjust the size of the outlet, and consequently the rapidity with which the air may escape from the lungs, as is well understood with breathing-tubes of this character. The plug *g* is screwed in and out by means of a milled head *i*. The valve-seat is formed on the end of a cap *k*, which closes the end of the valve-chamber and which is threaded at *l* to make it removable to permit the insertion of the valve. The movement of the valve away from its seat is limited by the plug *g*.

The adjustable plug *g* may, if desired, be provided with a perforation *x*, as shown in Fig. 3, which prevents it being entirely closed by screwing to its seat, and thus provide a minimum outlet. There are three ways for fixing the minimum outflow—to wit, either by the small orifice or perforation opening into the passage *d*, which extends through the plug *g*, the arrangement being such that when the plug is screwed home air can escape through the orifice into the passage even when the plug *g* or regulator is screwed home, or by an independent orifice *y*, made in the tube anywhere above the valve, as shown in Figs. 2 and 3, or by an orifice or passage extending longitudinally through the valve. (Not shown.)

With my arrangement it is perfectly easy for the user to regulate the outflow to suit his wishes, taking any point between the maximum and the minimum. He does not have to take care of any loose or detached parts and he can regulate the outflow at will while holding the device in his mouth.

In practice the user should inflate his lungs and then endeavor to hold them inflated without taking a new breath until all the inflated air has passed out through the tube, using the maximum outflow. By degrees he should render himself able to use the minimum outflow. Then in practice from day to day he should use the maximum, the minimum, or some intermediate outflow, as seems best suited to his condition at the time.

A breathing-tube as above described is of simple and cheap construction and may be adjusted to regulate the exhalation without exchanging the valve or substituting other



parts. The plug *g* serves the double purpose of controlling the exhaling-port and providing a limited stop for the valve.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. A breathing-tube provided with a valved opening for inhalation, closing against exhalation, and a plug threaded in said tube provided with an exhaling - passage, and screwing to and from a seat in the bore of the tube to regulate exhalation, substantially as explained.

2. A breathing-tube provided with a longitudinal bore having a valve seating in one direction, and with a transverse plug threaded through one side of the tube seating

against the opposite inner wall of the bore, and having a longitudinal exhaling-passage which is regulated by adjustment of the plug to and from the said wall, substantially as explained.

3. In combination with a breathing-tube having a valve closing its bore in one direction, a transverse plug beyond the valve, limiting the opening of the valve, said plug being formed with a longitudinal passage, and threaded into the wall of the tube, substantially as explained.

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Witnesses:

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