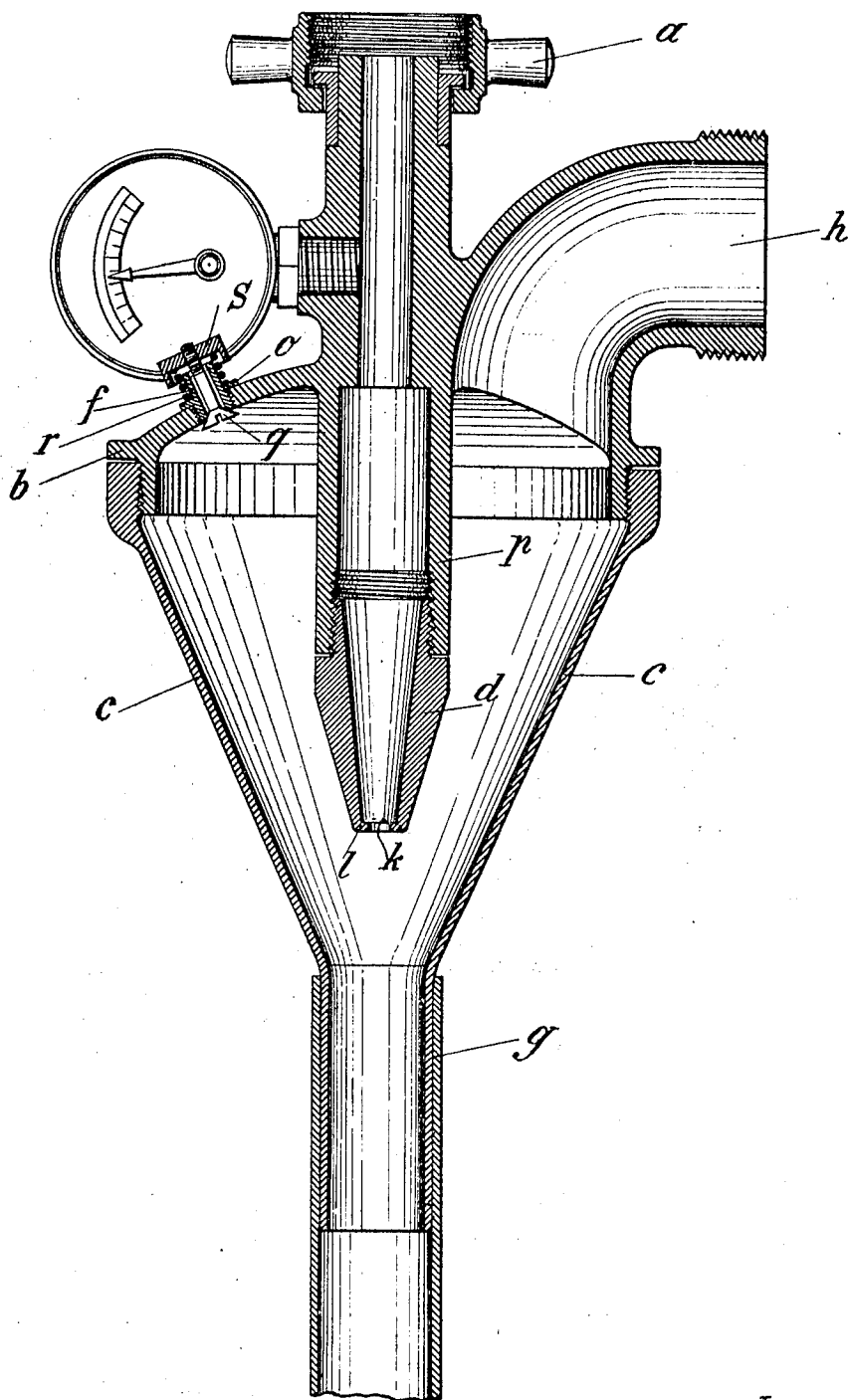


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 NOZZLE FOR APPARATUS FOR EXHAUSTING, PROPELLING, AND INDUCING CURRENTS IN FLUIDS.
 APPLICATION FILED FEB. 13, 1911.

1,039,231.

Patented Sept. 24, 1912.



Witnesses:

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NOZZLE FOR APPARATUS FOR EXHAUSTING, PROPELLING, AND INDUCING CURRENTS
IN FLUIDS.

1,039,231.

Specification of Letters Patent. Patented Sept. 24, 1912.

Application filed February 13, 1911. Serial No. 608,308.

To all whom it may concern:

Be it known that I, GOTTFRIED WEIDMANN, a citizen of the Swiss Confederation, and residing at Zollikon, near Zurich, Switzerland, have invented new and useful Improvements in Nozzles for Apparatus for Exhausting, Propelling, and Inducing Currents in Fluids, of which the following is a specification.

10 The present invention relates to apparatus for exhausting, propelling, or inducing currents in air or other fluids and more especially for creating a vacuum by means of liquid inducing jets.

15 The invention is particularly applicable for vacuum cleaning purposes.

The object of the invention is to increase efficiency by causing the jet of liquid delivered by one or more nozzles to be broken up into small particles each of which exerts a forcing-action on the air or gas particles in front of it. I attain this object by providing the nozzles with means for increasing the contraction of the jet and I have found that by the arrangement of the jet-orifice in a short annular ring or neck protruding inwardly from the tapering wall of the nozzle a very high efficiency can be obtained.

25 In the accompanying drawings a vacuum apparatus for cleaning carpets, furniture and the like in which the exhaustion is produced by a water jet is shown by way of an example in a sectional view.

30 The apparatus shown consists of a conical body *c* having at its apex an outlet on which the exhaust pipe *g* is fixed. On to the body *c* a cover *b* is screwed having two sockets *p* and *h*. The socket *p* is co-axial to said exhaust pipe *g* and extends to both sides of the cover *b*. The outer end is provided with a nut *a* by means of which the apparatus may be connected to a water supply. On socket *h* which is provided with screw threads a suction pipe or hose may be attached. On the inner end of socket *p* a nozzle *d* is removably fixed. The nozzle *d* is tapering and has a flange *l*, the edge *k* of which is preferably sharp. As the neck is short in comparison to the diameter of the orifice the jet

issued through the nozzle will show a high contraction and the outer part of it is at once broken up, the water particles are mingled with air and force the air particles down the discharge tube *g*. All conditions being equal the nozzle shown will need at least 20 per cent. less water to propel the same amount of air than the usual tapering nozzle having equal diameter of the orifice. On the outer part of socket *p* a pressure gage is attached. To prevent the back-flow of water from the discharge pipe into the suction-pipe I provide a valve *f* adapted to open automatically as soon as the vacuum has reached the point at which the pressure of the atmosphere may press the water back through pipe *g*. The valve *f* comprises a sleeve *o* adapted to be screwed into the cover *b* and having a valve seat on to which a disk *q* is pressed by means of a spring *r* abutting on the one side on a flange of the sleeve and on the other side on a nut *s* screwed on the stem of disk valve *q*.

Various changes may be made in the construction shown without departing from the spirit of my invention. The nozzle may be connected to the socket otherwise as shown or may be made removable, moreover there may be made more than one nozzle to form a multiple-jet apparatus. Instead of making the ring *l* in one piece with the nozzle it may be made separate and it may be exchangeably fitted in the nozzle. The ring *l* may be provided with incisions or the like or it may be replaced by a circular row of projections protruding inwardly from the wall of the nozzle.

The invention may be applied to any apparatus for propelling exhausting or inducing currents in any fluid.

What I claim is,

In a vacuum producing device, the combination of a casing having a discharge outlet and an air inlet opening to said casing rearwardly of said outlet, said casing being normally closed except for said outlet and inlet, a liquid discharge nozzle projecting through the normally closed portion of the casing toward said outlet and with the dis-

charge end in advance of said inlet, the bore of said nozzle being circular and converging toward the discharge end, and an inwardly projecting circular flange at the discharge end of said nozzle contracting the discharging stream, said flange being relatively thin as compared with the cross section of the opening therein.

In testimony whereof I affix my signature in presence of two witnesses.

GOTTFRIED WEIDMANN.

Witnesses:

CARL GUBLER,
AUGUST RÜEGG.