No. 751,786. PATENTED FEB. 9, 1904.

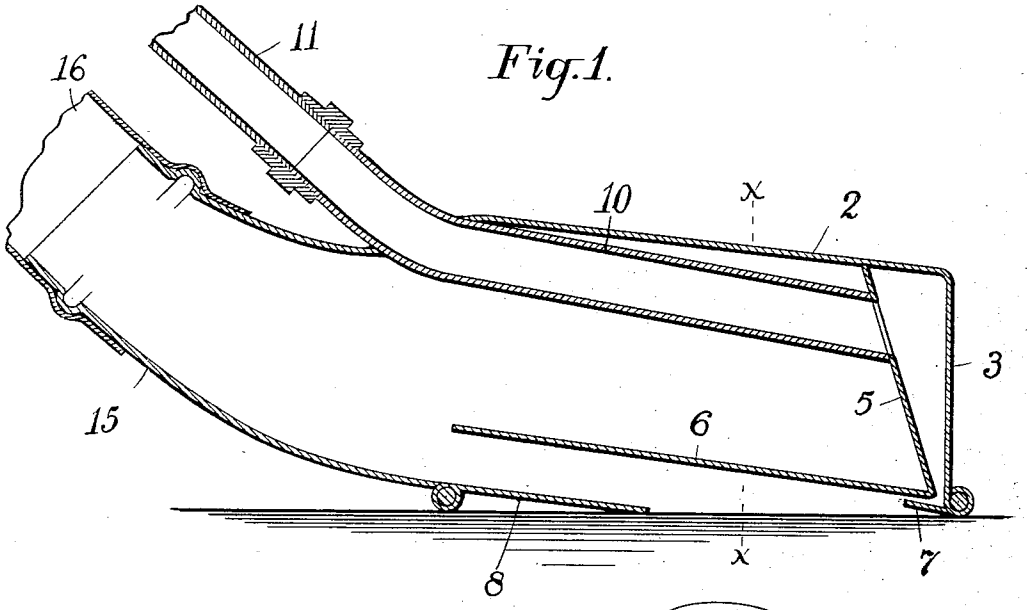
E. E. ELSTON, JR.

CLEANING DEVICE.

APPLICATION FILED FEB. 4, 1903. RENEWED JAN. 11, 1904.

NO MODEL.

Fig. 1.



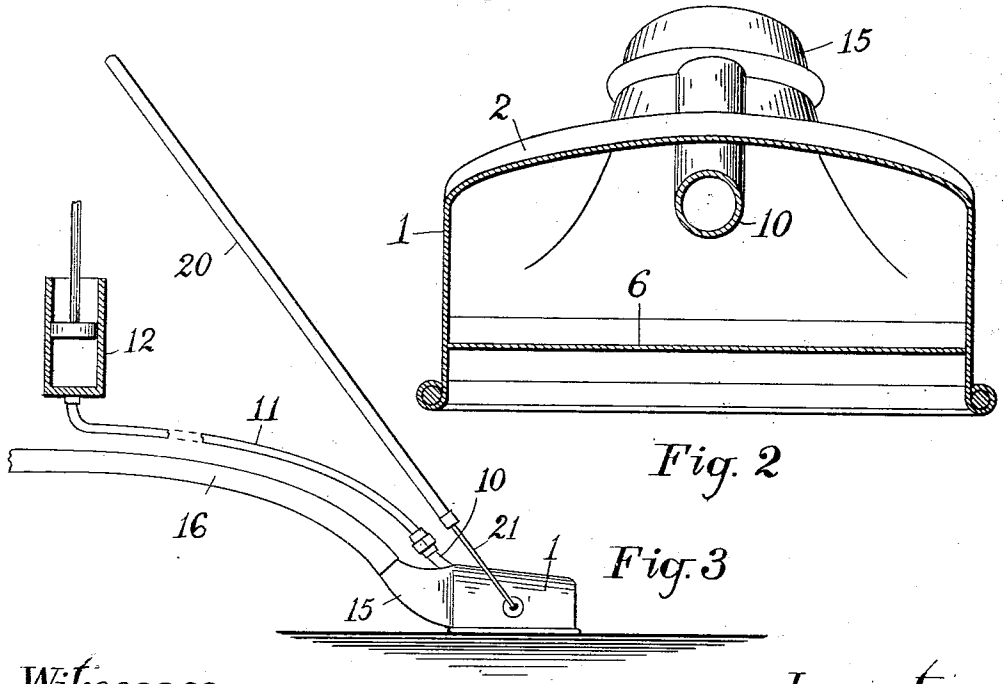


Fig. 2

Fig. 3

Witnesses;

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No. 751,786. Patented February 9, 1904.

UNITED STATES PATENT OFFICE.

EDMUND E. ELSTON, JR., OF NORWOOD, MASSACHUSETTS, ASSIGNOR TO WILLIAM H. EMERSON, OF CAMBRIDGE, MASSACHUSETTS.

CLEANING DEVICE.

SPECIFICATION forming part of Letters Patent No. 751,786, dated February 9, 1904.

Application filed February 4, 1903. Renewed January 11, 1904. Serial No. 188,665. (No model.)

To all whom it may concern:

Be it known that I, EDMUND E. ELSTON, JR., a citizen of the United States, and a resident of Norwood, in the county of Norfolk, State of Massachusetts, have invented certain new and useful Improvements in Cleaning Devices, of which the following is a full, clear, and exact description.

The object of this invention is the construction of a device for cleaning car-cushions, carpets, walls, draperies, and other objects liable to accumulate dust; and my invention for this purpose consists, essentially, of a box having a mouth or opening in one side designed to be located on or near the object to be cleaned, means for applying a current of compressed air across said mouth in a manner to create a suction into the same, and an exhaust opening or pipe for receiving and discharging the dust-laden air from said box.

Referring to the drawings forming part of this specification, Figure 1 is a sectional elevation of the device through its longitudinal center. Fig. 2 is a transverse section of the same on the line X X in Fig. 1, and Fig. 3 is a side view of the device on a smaller scale as adapted for floors and walls.

The showing in Figs. 1 and 2 of the device is nearly full size, although there is nothing to prevent either much larger or smaller sizes to be made for special work. The box 1 is preferably formed from sheet metal and having its top 2 both curved laterally, as shown in Fig. 2, and sloped downward toward the end 3 for the purpose hereinafter set forth. Extended transversely across said box near the end 3 and inclosing a wedge-shaped space is an air-tight partition 5, receiving the tube 10. The outer end of said tube is suitably threaded for the purpose of having a compressed-air pipe 11 coupled thereto, said pipe 11 being connected to a suitable source of compressed air or other fluid, (designated in a conventional manner by the numeral 12.) Close below the lower edge of said partition 5 is a narrow shelf or deflector-plate 7, extending the entire width of the box and inclined slightly upward at its unconfined edge. This shelf or deflector-plate is soldered or otherwise connected to the end and sides of the box and forms, with the under surface of the adjoining part of the diaphragm, a pair of lips inclosing a narrow horizontal slit through which a thin but strong stream of air is directed toward the discharge-opening and in contact with the under surface of said diaphragm. Above said deflector-plate and reaching from the lower edge of the partition 5 is the diaphragm 6, inclined somewhat, as shown in Fig. 1, while below said diaphragm and substantially parallel with it is the partial floor 8, extending the entire width of the box, but closing less than a half of the lower side of the box, the left-hand end of the box being contracted and prolonged into a tubular discharge-spout 15, constructed to be joined to a discharge-hose leading to any suitable point. A conduit is provided for the dust-laden air from the device.

The operation of the device is as follows: A constant current of compressed air being forced through the pipe 11 is conducted by the tube 10 to the wedge-shaped space between the partition 5 and box end 3 and issues from thence in a thin sheet between the deflector-plate 7 and diaphragm 6. This powerful air-sheet follows the diaphragm 6 to the space between the latter and the partial floor 8 and from there to the discharge-spout; but in its passage it causes a powerful inrush of the surrounding air to flow on with it through the spout and discharge-hose. This suction I have found to be about ten pounds per square inch where the air-pressure through the pipe 11 is from thirty-five to forty pounds per inch. By placing this box upon any surface which it is desired to clean, as a car-seat cushion, a carpet, draperies, clothing, or even upon a bare floor or a room wall or ceiling, this strong suction draws in through the mouth of the box whatever dust and dirt may be within the compass of such mouth and within several inches to the exterior thereof, the distance depending upon the degree of imperviousness of the surface. In the case of a cushion, carpet, or other fabric the dust is drawn

from between the fibers thereof wherever the cleaner is placed, and by moving the latter back and forth until the entire surface has been gone over the fabric will be found to have been perfectly renovated.

For carpets in position, walls, and ceilings I prefer to provide the device with a long handle 20, pivotally connected thereto by a suitable bail 21; but for car-seat cushions and many other objects such handle is unnecessary.

Although the outer extremity of the tube 10 may connect with the box 1 at any point of the top or sides, yet I prefer the position shown in order that the box may be introduced as far as possible beneath articles of furniture and into the corners of rooms, and it is for the same reason that I both curve and slant the box-top.

It is not necessary for carpets, cushions, rugs, and other articles to be removed from their places, as my cleaning device can be applied to them as they lie and perfectly clean them from all dust and dirt.

While I have herein shown and described the preferred form of this apparatus, I do not desire to limit myself to this exact construction, for the prime object of the invention is to so construct a device of this general character that a supply of compressed air may be directed to pass over an opening in such manner that an inrush of atmospheric air through said opening may be effected and that this atmospheric air with the dust and other impurities carried thereby may be directed toward a suitable outlet.

What I claim as my invention, and for which I desire Letters Patent, is as follows, to wit:

1. A device of the character described, comprising a box having one of its sides open and provided with an inlet for a fluid under pressure and an outlet for the escape of dust, a partition extending over the open side of the box but spaced therefrom, a deflector arranged in close proximity to the partition to form a narrow fluid-discharge between said deflector and partition, said discharge-opening being so arranged with relation to the partition that fluid fed into the box is discharged toward and along the partition to produce a suction at the open side of the box.

2. A device of the character described, comprising a box having one of its sides open and provided with an inlet for fluid under pressure and an outlet for the escape of dust, a partition extending over the open side of the box, a deflector arranged parallel with the partition and in close proximity thereto to form a narrow fluid-discharge between said deflector and partition, said discharge-opening being so arranged with relation to the partition that fluid fed into the box is discharged toward and along the partition to produce a suction at the open side of the box.

3. A device of the character described, comprising a box having one of its sides open and provided with an inlet for a fluid under pressure and an outlet for the escape of the dust, said box also having a chamber therein into which the fluid is fed from said inlet, a partition extending over the open side of the box but spaced therefrom and a deflector arranged adjacent to the open side of the box and inclined toward said partition to form a narrow fluid-discharge between said deflector and partition, said discharge being in communication with said chamber, whereby the fluid in the chamber is discharged toward and along the partition to produce a suction at the open side of the box.

4. A device of the character described, comprising a box open at one side and having a triangular chamber formed therein and open at its lower end, an inlet-pipe entering said chamber and adapted to discharge therein a fluid under pressure, an outlet-pipe connected to the box for the escape of dust, a partition extending over the open side of the box but spaced therefrom, a deflector below the triangular chamber and so arranged with relation to the partition that a narrow discharge-opening between the partition and deflector will be formed whereby the fluid from the open end of the chamber is discharged toward and along the partition to produce a suction at the open side of the box.

5. A device of the class described, comprising a box having one of its sides open and provided with an inlet for a fluid under tension, and an outlet for the escape of the dust, a partition arranged in said box at one end thereof to form a chamber therein, a pipe leading from said inlet to said chamber for feeding the fluid to the latter, said partition being inclined, whereby one end of said chamber is contracted, a partition extending over the open side of the box but spaced therefrom, and a deflector arranged adjacent to the open side of the box and inclined toward said partition to form a narrow fluid-discharge between said deflector and said partition, said discharge being in communication with the contracted end of said chamber, whereby the fluid in said chamber is discharged toward and along the partition to produce a suction at the open side of the box.

In testimony that I claim the foregoing invention I have hereunto set my hand this 21st day of January, 1903.

EDMUND E. ELSTON, JR.

Witnesses:

A. B. UPHAM,

E. W. WAITE.