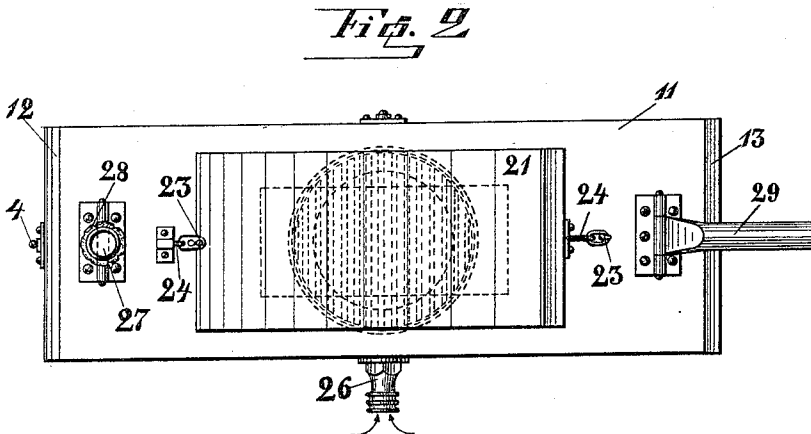
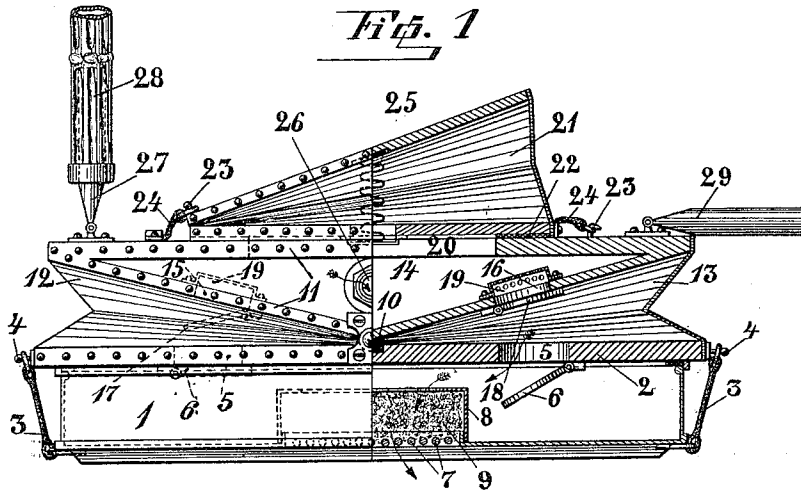


1,013,014.

Patented Dec. 26, 1911.



WITNESSES:

W. H. Berrigan.
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 BY *Handelmeier*
 Attorney.

UNITED STATES PATENT OFFICE.

ADOLF HEIN, OF BERLIN, GERMANY, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE
VACUUM CLEANER COMPANY, A CORPORATION OF NEW YORK.

PORTABLE SUCTION APPARATUS.

1,013,014.

Specification of Letters Patent.

Patented Dec. 26, 1911.

Application filed March 5, 1907. Serial No. 360,765.

To all whom it may concern:

Be it known that I, ADOLF HEIN, a citizen of the German Empire, residing at No. 24 Lausitzerstrasse, Berlin, in the Kingdom of Prussia, Germany, have invented a new and useful Portable Suction Apparatus, of which the following is a specification.

The object of this invention is to provide a vacuum producing apparatus, convenient for household purposes in cleaning carpets, furniture, curtains, etc., which is easily transported, and which is a light, handy apparatus, which a single person can operate, and, at the same time, manage the nozzle provided with various exchangeable mouth pieces. This object is obtained by an apparatus consisting of two wedge shaped bellows secured edge to edge to a rocking board forming one wall of each of the bellows and supported by a bottom plate under which is a receiver, said bellows being connected with a common suction chamber. The rocking board is adapted to be moved by hand or foot or by both together, so that the bellows are alternately opened and closed and suction thus produced, while the nozzle can be provided with a mouth piece for each special purpose.

On the accompanying drawing the suction apparatus and nozzle are shown by way of example.

Figure 1 is a half section and a half elevation and Fig. 2 a plan of the suction apparatus.

The apparatus shown in Figs. 1 and 2 consists of a box 1 on which the bottom plate 2 of the bellows is placed, being secured to said box 1 by elastic cords 3 or the like which engage with hooks 4 at the edge of the bottom plate 2. This plate 2 is provided with openings 5 adapted to be closed by the valves 6. At the bottom of the box 1 is secured a grating or sieve 7 over which is arranged cotton wool 9, inclosed by an open box 8. Into the bottom plate 2 a piece of elastic material 10, such as rubber or the like is let in, by which the rocking board 11 consisting of two equal members connected together at an obtuse angle is supported. To this rocking board 11 the bellows 12, 13 are secured with their edges together, the lower part being connected airtight to the bottom plate 2. In the rocking board 11 there is a chamber 14 which communicates through openings 15, 16 with the

bellows 12 and 13, said openings being provided with valves 17 and 18, under suitable tension. Further, these openings are protected by perforated hoods 19 so that coarser particles such as shavings, threads, etc., cannot pass into the bellows 12, 13. The top of the rocking board 11 is provided with an opening 20 which communicates with another prismatic bellows 21, which is secured to the top of the rocking board 11 by hooks 23, connected to said board and rubber cords 24 or the like, packing 22 of cloth, rubber or the like, being interposed. The hinged board of the bellows 21 is under the influence of a spring 25 secured, in suitable manner, to the rocking board. According as the spring is stronger or weaker, the vacuum in the chamber 14 will be higher or lower, because the bellows 21, owing to the pressure of the air, will be pressed down, according to the degree of rarefaction. By choosing a suitable spring, or by adjusting its tension, the vacuum can be regulated within the widest limits. Bellows 21 acts as an auxiliary bellows for keeping the vacuum steady under varying conditions of service and at the moments of reversal of bellows 12 and 13. It also serves as a cover for the suction chamber permitting ready access thereto for purposes of inspection, cleaning or repair. The suction chamber 14 is provided with an opening to which is attached a socket 26 for connecting the suction pipe.

The suction device described is operated by a handle 27 covered with a suitable grip 28, or a pedal 29, or both by which the bellows are moved alternately up and down, so that one of the bellows sucks air out of the suction pipe into the suction chamber, while the other bellows forces the air contained therein through the box 1, the cotton wool 9 and the sieve 7 into the atmosphere. According to the speed at which the rocking board is moved, the suction is augmented and the spring 25 compressed, so that the degree of the vacuum in the suction pipe and nozzles can be continuously controlled. In the chamber 14 a certain amount of dust will also be collected by reason of its size and the slower movement of air therein, and the opening 20 is made larger for the insertion therethrough of cotton, wool or the like to catch the dust, and for the convenient removal of the dust.

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By moving the rocking board up and down, which is done by pressing the foot on 29 and by means of the handle 28 operated by hand, the operator can use the other hand to manage the nozzle. The handle 28 serves at the same time as a support, so that the operator is not fatigued.

What I claim and desire to secure by Letters Patent of the United States is:

1. In a vacuum producing apparatus, a box provided with an outlet port, means for straining the air on passing through the port, two bellows supported by and opening into the box and arranged end to end, a rocking-board forming one wall of each of the bellows, and means for operating the rocking-board, substantially as described.

2. In a vacuum producing apparatus, a box provided with an outlet port, means for straining the air on passing through the port, a detachable cover-plate for the box, two bellows supported by the cover-plate and opening into the box and arranged end to end, a rocking-board hinged to the cover-plate and means for operating the rocking-board, each of the bellows having one of its walls formed by the cover-plate and another of its walls formed by the rocking-board, substantially as described.

3. In a vacuum producing apparatus, a box, two bellows supported by and opening into the box and arranged end to end, a hollow rocking-board constituting a suction chamber opening into and forming one wall of each of the bellows, in combination with means for operating the rocking-board, substantially as described.

4. In a vacuum producing apparatus, a box provided with an outlet port, means for straining the air on passing through the port, a bellows supported by and opening into the box and a suction chamber opening into said bellows and forming one wall of the latter, substantially as described.

5. In a vacuum producing apparatus, a box, two bellows supported by and opening into said box and arranged end to end, a hollow rocking board constituting a suction

chamber opening into both said bellows and forming one wall of each of the same, in combination with a separate bellows also connected with said suction chamber and a spring for maintaining said separate bellows normally distended.

6. In a vacuum producing apparatus, a hollow rocking-board constituting a suction chamber, two bellows arranged end to end and connected with the suction chamber for drawing air therefrom one wall of each of the bellows being formed of the rocking-board, a valve for the opening from each of the bellows to the suction chamber and a perforated hood over each valve, substantially as described.

7. In a vacuum producing apparatus, a box provided with an outlet port, means for straining the air on passing through the port, two bellows supported by and opening into the box and arranged end to end, a hollow rocking-board constituting a suction chamber opening into and forming one wall of each of the bellows, a valve for the opening from each of the bellows to the suction chamber, a perforated hood over each of the valves, an auxiliary bellows supported by and connected with the suction chamber and means for operating the rocking-board, substantially as described.

8. In a vacuum producing apparatus, a hollow rocking-board constituting a suction chamber, two bellows arranged end to end and connected with the suction chamber for drawing air therefrom, one wall of each of the bellows being formed by the rocking-board, the suction chamber being provided with a cover comprising an auxiliary bellows, and a spring for maintaining said auxiliary bellows normally extended, substantially as described.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

ADOLF HEIN.

Witnesses:

HENRY HASPER,
ARTHUR SCHROEDER.