

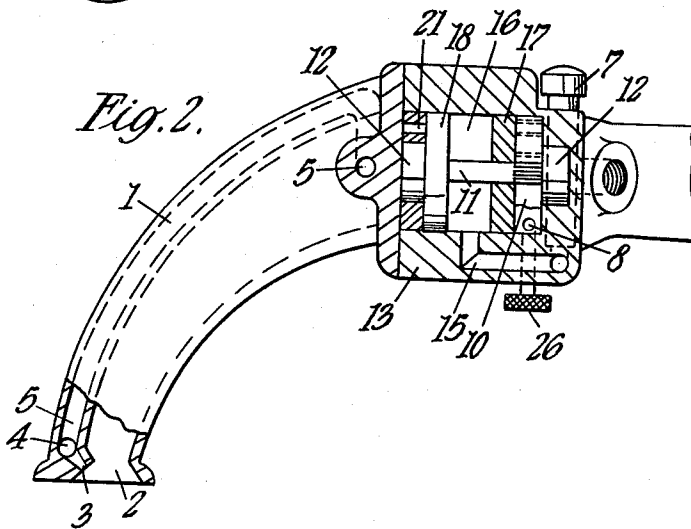
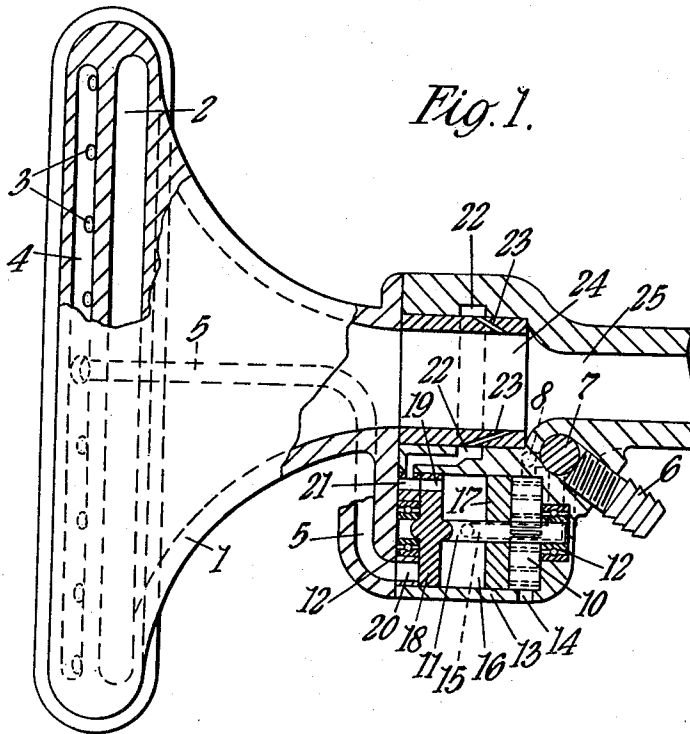
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H. A. R. MANDIN

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CLEANER NOZZLE WITH PULSATING JET

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CLEANER NOZZLE WITH PULSATING JET

Hans August Rudolf Mandin, P.O. Box 295,  
Uddevalla, Sweden

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1 Claim. (Cl. 15-345)

This invention relates to suction sweepers and particularly the nozzle therefor.

The object of the invention is to provide a nozzle for suction sweepers by means of which the article to be treated, for example a carpet, a curtain etc., can be subjected to an oscillatory movement, which releases sand, fibres and other impurities, so that they can be sucked away.

The nozzle according to the invention comprises a mouthpiece provided with a plurality of openings which debouch into or near to said mouth, a valve, a source of gas under pressure and a pipe line connecting the openings with the gas, be it compressed air or steam, said valve being adapted to open or close at regular, short intervals.

The invention will now be described with reference to the accompanying drawings, in which:

FIGURE 1 is a part plan, part sectional view of an embodiment of the nozzle according to the invention, in which the suction action is produced by compressed gas outlet openings discharging into the nozzle, and

FIGURE 2 is a part side view, part sectional view of FIGURE 1.

A suction mouthpiece 1 having a slot-shaped suction mouth 2 is provided with a plurality of outlet openings 3, for distributing compressed air over the width of the suction mouth 2, and connected to a distributing channel 4, attached in the mouthpiece 1 and connected with a distribution channel 5 fitted in the mouthpiece 1. The apparatus is provided with a pipe nipple 6 which can be connected by means of a hose to a source of compressed air. Compressed air passes from the said nipple 6, when a valve 7 is in the open position, through a canal 8 to a turbine 10. The turbine 10 is fixed to a shaft 11, mounted by means of ball bearings 12 and a valve housing 13. An outlet 14 from the turbine chamber permits driving air to exhaust to the atmosphere after actuating the turbine blades. The valve 7 is in connection by means of an angle canal 15, with a valve chamber 16, which is separated from the turbine chamber by means of a wall 17. A valve disk 18, which is fixed to the shaft 11 and has a through opening 19, rotates with the turbine. At two suitably diametrically opposite points of the circular path of the opening 19 are passages 20 and 21 with which opening 19 communicates to supply air under pressure alternately. The passage 20 communicates with the supply canal 5 and the passage 21 is connected with an annular distributing chamber 22, from which the air flows out through jet canals 23 into an ejector chamber 24 in the suction mouthpiece. The jet canals 23 are directed inwardly into the suction mouthpiece in such a manner that the jets of air under pressure, in a manner known per se, produce a suction action. This last described arrangement thus forms a jet pump,

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the suction side of which is connected to the mouthpiece 1 and the outlet side is connected to a passage 25, which can be connected to a dust collecting device, for example a filter bag. The speed of rotation of the turbine can be regulated by means of a screw 26, which regulates the cross-section of the canal 8.

The outlet openings 3, for air under pressure, are directed in such a manner that the periodical impulses of the air under pressure received during the rotation of the valve disk 18 act on the same side, which is subjected to the suction action. This means that the treated material is subjected to periodical pressure impulses. By the adaptation of the speed of the turbine the said periodicity can be kept at or near to the inherent frequency number in the treated material, so that the same effect is obtained as with beating. Dust and foreign particles are released and caught up more easily by the suction. The blowing effect produced by means of the openings 3 makes possible the cleaning of depressions, projections and the like where suction action is insufficient.

Various modifications may be made to the embodiments adopted without departing from the scope of the invention as defined by the appended claim.

I claim:

In a suction sweeper a cleaner nozzle comprising a mouthpiece having a suction mouth, said mouthpiece having portions defining a plurality of passages which debouch at said mouth, portions of said nozzle defining a plurality of jet canals debouching into an ejector chamber in the nozzle, other portions of said nozzle defining a valve chamber between the jet canals and the plurality of passages, a rotatable valve in said valve chamber, said rotatable valve comprising a generally circular element having portions defining a passageway therein, a turbine drivingly connected to said circular element, a source of fluid under pressure in communication with said valve chamber and said turbine to drive the same, said circular element operable upon rotation of said valve to intermittently and alternatively allow a flow of fluid from said valve chamber to the plurality of passages and jet canals, a first valve in said nozzle between said turbine and the source of fluid under pressure to vary the flow of fluid to said turbine to regulate the speed of the same, and a second valve in said nozzle between the source of fluid under pressure and said valve chamber operable to control the admission of fluid to the said valve chamber.

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