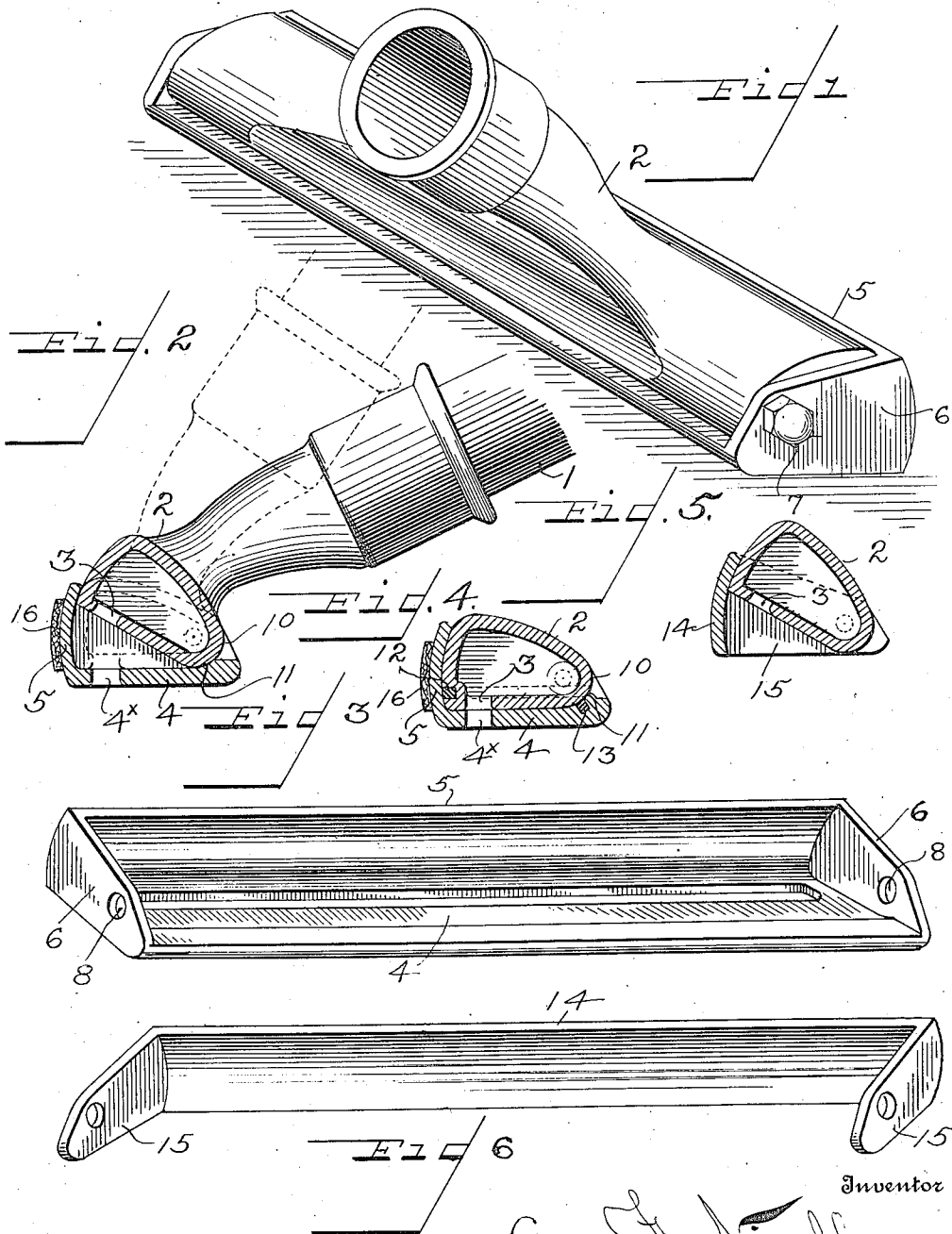


G. F. NIUFFER.
ADJUSTABLE NOZZLE.
APPLICATION FILED JAN. 25, 1912.

1,050,989.

Patented Jan. 21, 1913.



Witnesses
Effie B. Luttinger
Harry F. Nolan

Inventor
G. F. Niuffer
By J. L. Walker
Attorney

UNITED STATES PATENT OFFICE.

GEORGE F. NIUFFER, OF SPRINGFIELD, OHIO, ASSIGNOR OF ONE-HALF TO CHARLES L. STEELE, OF SPRINGFIELD, OHIO.

ADJUSTABLE NOZZLE.

1,050,989.

Specification of Letters Patent.

Patented Jan. 21, 1913.

Application filed January 25, 1912. Serial No. 673,410.

To all whom it may concern:

Be it known that I, GEORGE F. NIUFFER, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Adjustable Nozzles, of which the following is a specification.

My invention relates to suction cleaning apparatus and particularly to an adjustable intake nozzle therefor.

The object of the invention is to provide an adjustable nozzle simple in structure as well as in its operation whereby it will not only be cheap in construction but will be efficient in use, capable of readily yielding to various positions of the hand piece or intake handle, durable, and unlikely to get out of repair.

A further object of the invention is to provide an intake nozzle which may readily be introduced into restricted recesses and beneath articles of furniture, etc., while at the same time maintaining operative engagement with the floor or surface operated upon.

With the above primary and other incidental objects in view as will more fully appear in the specification, the invention consists of the features of construction, the parts and combinations thereof, and the mode of operation or their equivalents as hereinafter described and set forth in the claims.

In the drawings, Figure 1 is a perspective view of the assembled device. Fig. 2 is a side elevation partly in section of the assembled device, the handle or intake pipe being shown in different positions of angular adjustment, while the shoe or contact piece maintains its normal operative position. Fig. 3 is a detail perspective view of the shoe or contact piece removed from the nozzle. Fig. 4 is a transverse sectional view showing packing material introduced between the relative movable parts. Fig. 5 is a transverse sectional view of a modification of the device shown in the previous four figures. Fig. 6 is a detail perspective view of the shoe or contact piece employed in the modified construction shown in Fig. 5.

Like parts are indicated by similar characters of reference throughout the several views.

In the drawings, 1 is the intake pipe

which communicates with the dirt receiver and pump not shown in the drawings and which forms the handle or hand piece by which the intake nozzle forming the subject matter hereof is propelled to and fro over the surface to be operated upon. The intake pipe 1 is connected at its lower extremity to a hollow T shaped nozzle member 2 having in the bottom side thereof a transverse slot 3. A shoe or contact member is provided comprising a bottom 4, having therein a longitudinal slot 4*, an arcuate front wall 5 and end walls 6. The transverse or head portion of the T shaped nozzle 2 is pivotally engaged with the end walls 6 of the shoe or contact member by trunnions of any suitable form. In the drawing, the nozzle member 2 is shown as pivotally connected with the shoe or contact member by means of cap screws 7 passing through holes 8 in the end walls 6 of the shoe and engaging the extremities of the nozzle member 2. It is obvious that the trunnions might be formed integral with either the nozzle member or the shoe and adapted to engage the other member in any of the well known manners. The front wall 5 of the shoe or contact member is formed concentric with the pivotal connection of the nozzle member 2 and the shoe. The forward side of the nozzle member 2 is likewise formed arcuate and of a corresponding curvature whereby the forward wall of the nozzle member will maintain a constant and close engagement with the arcuate forward wall of the shoe in all positions of adjustment about its pivotal connection with said shoe. The heel portion of the nozzle is likewise formed concentric with the axis of oscillation of the said nozzle member as shown at 10. The bottom plate 4 of the shoe is preferably provided with a depression or groove as at 11 corresponding with the concentric heel of the nozzle. The extremities of the nozzle member 2 are likewise fitted to the end walls 6 of the shoe or contact member.

The construction is such as to provide approximately an air-tight bearing between the forward side of the nozzle and the arcuate wall 5 of the shoe and between the concentric heel 10 and the groove depression 11 of the shoe, and likewise between the end of the nozzle and the end walls 6 of the shoe. While a close fit at these points is de-

60

65

70

75

80

85

90

95

100

105

110

sirable it is not necessary that these joints or bearings be hermetically packed or sealed. In fact it is desirable that a limited quantity of air be allowed to enter the nozzle otherwise than through the intake slot 4* and 3 in order to create a current which will draw the dirt or dust through the intake slot 4* and 3 by suction. It will be found that the ordinary methods of construction will provide joints sufficiently close between the arcuate surfaces of the intake member and shoe and between the heel 10 and groove 11. If it is found however that through inaccuracies in manufacture the bearings are not sufficiently close, strips of suitable packings 12 and 13 may be introduced in the bearings of the forward wall of the nozzle with the arcuate wall 5 of the shoe and the bearing of the heel 10 of the nozzle with the depression 11 as shown in Fig. 4. In this figure the strip of packing material 12 is shown as carried in the nozzle member and engaging the wall of the shoe, while the strip of packing material 13 is shown as being carried by the shoe and engaging the nozzle member. It is obvious that either of these strips may be reversed whereby the packing may be carried either by the shoe or the nozzle member without affecting the operation of the device. In the event that the packing is used as shown in Fig. 4 the end bearings of the device are likewise provided with a strip of packing as shown by dotted lines in said figure.

In Figs. 5 and 6 is shown a modification in which the bottom plate 4 of the shoe has been eliminated, the shoe or contact member comprising only the forward arcuate wall 14 and the walls 15. The nozzle is employed with this shoe or contact member exactly as hereinbefore described. In this construction the heel 10 of the nozzle member is adapted to engage the surface operated upon.

The device may be constructed of aluminum, brass, cast iron, glass or any other suitable material, and provided with a protective strip 16 of felt or similar material.

While in order to comply with the statute, the invention has been herein described in language more or less specific as to certain structural features, it is to be understood that the invention is not limited to any specific details but that the means and mechanism herein shown and described comprise

but one mode of putting the invention into effect and the invention is susceptible of modification in its form, proportion, detail construction and arrangement of parts without departing from the principle involved or sacrificing any of its advantages.

Having thus described my invention, I claim:

1. In a nozzle for suction apparatus, a shoe having a slotted flat bottom adapted to slide upon the surface operated upon, an intake member pivoted to said shoe and having a slotted flat surface adapted to be adjusted to different angular positions in relation to the flat bottomed shoe, substantially as specified.

2. In a nozzle for suction apparatus, a shoe member adapted to slide upon the surface operated upon, including a transverse wall and end walls, an intake member pivotally carried intermediate the end walls and adjustable about its pivotal connection to different angular positions independent of the shoe, said intake member being adapted to maintain engagement with the walls of the shoe throughout its degree of movement, and an arcuate heel on said intake member concentric with the pivotal connection thereof, substantially as specified.

3. In a nozzle for suction apparatus, a shoe having end walls and a front wall, and a hollow intake member having a bottom wall provided with an intake opening, end walls having eccentric pivotal connection with the end walls of the shoe and a front wall in engagement with the front wall of the shoe, the front walls being concentric with the pivots.

4. In a nozzle for suction apparatus, a shoe having a flat bearing surface, an arcuate wall and end walls carried by the shoe, a sector shaped intake member pivotally carried by said shoe, said member having a surface adapted to engage the arcuate wall, said shoe having a depression therein and a heel portion on said intake member engaging in the depression, substantially as specified.

In testimony whereof, I have hereunto set my hand this 13th day of January, 1912.

GEORGE F. NIUFFER.

Witnesses:

HARRY F. NOLAN,
EFFIE B. LUTTINGER.