E. M. BARNES.

SUCTION CLEANER.

APPLICATION FILED MAY 13, 1912.

1,090,129.

Patented Mar. 17, 1914.

2 SHEETS—SHEET 1.

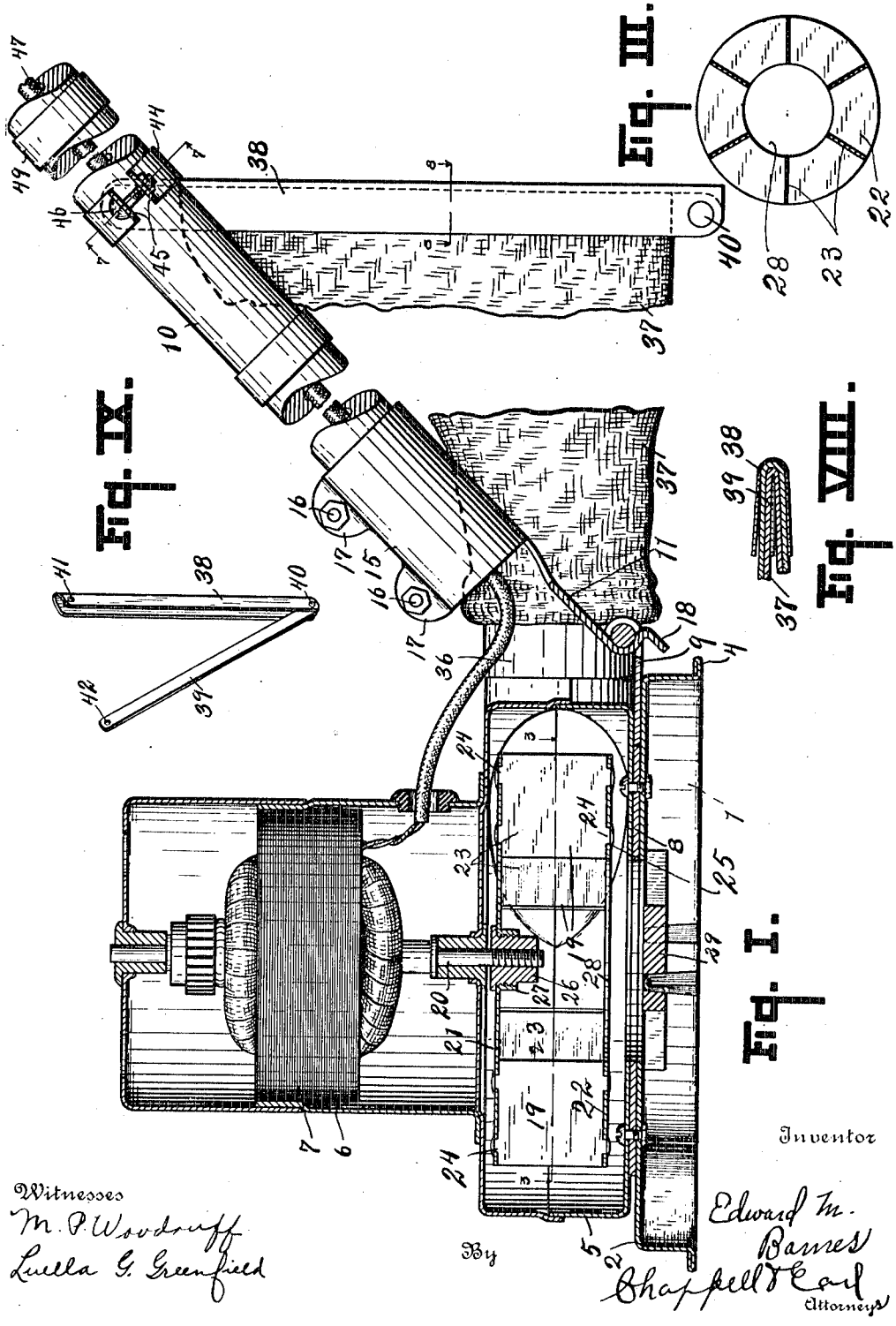


Fig. I.

Fig. III.

Fig. VIII.

Fig. IX.

Witnesses

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2 SHEETS—SHEET 2.

Fig. II.

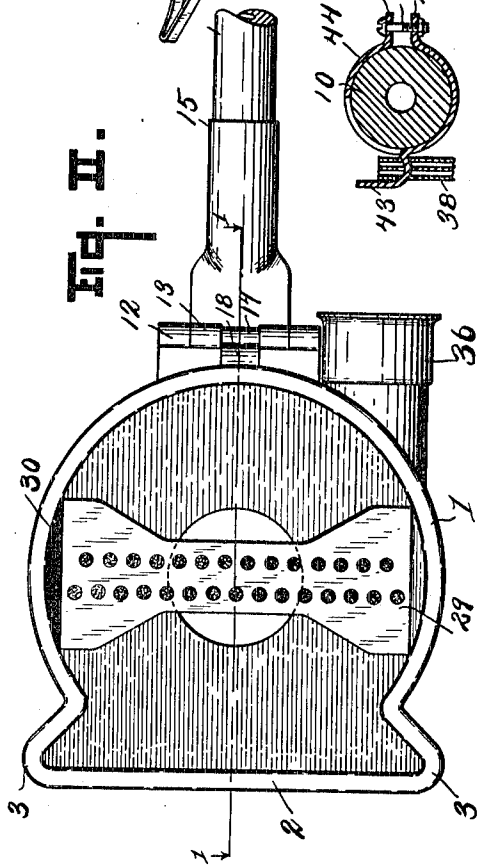


Fig. III.

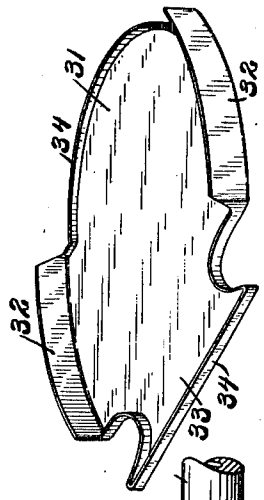


Fig. IV.

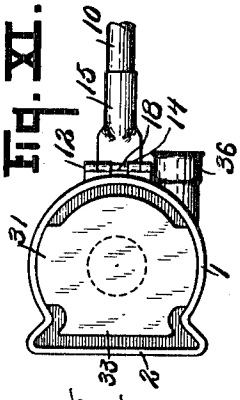


Fig. V.

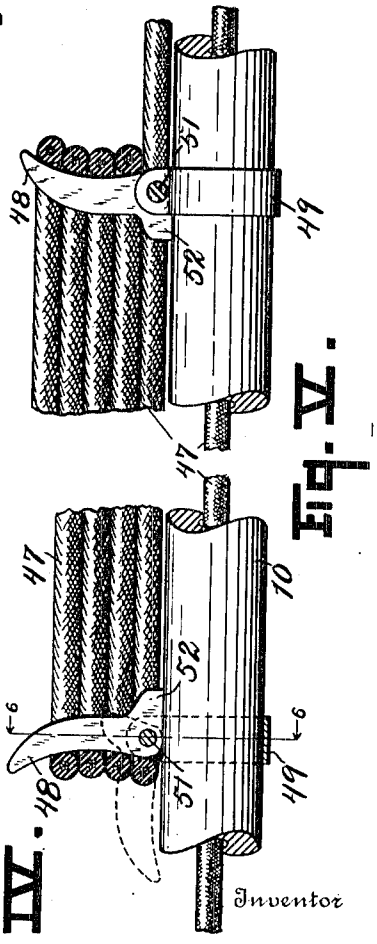


Fig. VI.

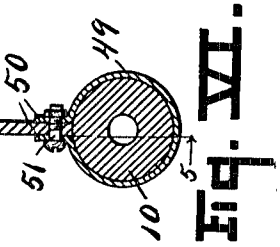
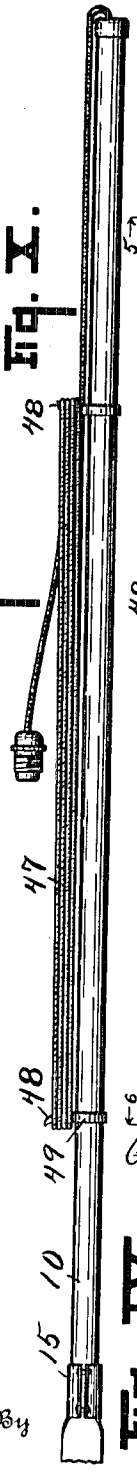


Fig. VII.

Fig. X.



Witnesses

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UNITED STATES PATENT OFFICE.

EDWARD M. BARNES, OF HASTINGS, MICHIGAN, ASSIGNOR TO ADVANCE M'F'G. CO., OF HASTINGS, MICHIGAN.

SUCTION-CLEANER.

1,090,129. Specification of Letters Patent. **Patented Mar. 17, 1914.**

Application filed May 13, 1912. Serial No. 696,832.

To all whom it may concern:

Be it known that I, EDWARD M. BARNES, a citizen of the United States, residing at Hastings, county of Barry, State of Michigan, have invented certain new and useful Improvements in Suction-Cleaners, of which the following is a specification.

This invention relates to improvements in suction cleaners.

The main objects of this invention are, first, to provide in a suction cleaner, an improved shoe; second, to provide in a suction cleaner an improved handle attachment or connection.

Further objects, and objects relating to structural details, will definitely appear from the detailed description to follow.

I accomplish the objects of my invention by the devices and means described in the following specification. The invention is clearly defined and pointed out in the claims.

A structure which is a preferred embodiment of my invention is clearly illustrated in the accompanying drawing, forming a part of this specification, in which:

Figure I is a detail vertical section taken on a line corresponding to line 1—1 of Fig. II, the handle and motor being shown in full lines. Fig. II is an inverted view with the dust bag removed, the handle being broken away. Fig. III is a horizontal section through the fan, taken on a line corresponding to line 3—3 of Fig. I. Fig. IV is a plan view of the handle with the cable 47 wound upon the supporting fingers 48. Fig. V is an enlarged detail, the cable 47 and one of the finger supporting clips 49 being in section on a line corresponding to line 5—5 of Fig. VI. Fig. VI is a transverse section taken on a line corresponding to line 6—6 of Fig. V. Fig. VII is a detail transverse section taken on a line corresponding to line 7—7 of Fig. I. Fig. VIII is a detail section taken on a line corresponding to line 8—8 of Fig. I. Fig. IX is a perspective view of the bag closure. Fig. X is an inverted view similar to Fig. II, with the brush 29 removed and the shoe plate 31 substituted therefor. Fig. XI is a perspective view of the shoe plate 31.

In the drawing, similar reference characters refer to similar parts throughout the several views, and the sectional views are taken looking in the direction of the little arrows at the ends of the section lines.

Referring to the drawing, the shoe 1 is cylindrical in general form and is provided with an extension 2 at its front side. The length of the extension is substantially the diameter of the shoe. The edge of the shoe is turned outwardly at 4, and folded inwardly upon itself to form the rim-like continuous tread. The shoe is formed of sheet metal and is shaped in general like an inverted shallow pan having one straight side.

The flange-like tread 4 serves not only to form a tread for the shoe to slide upon, but also reinforces the shoe so that it may be made of comparatively light sheet metal and is at the same time sufficiently strong for the work required.

The fan chamber 5 is mounted upon and carried by the shoe. This chamber is preferably the structure described in detail in my application for Letters Patent, filed June 17, 1911, Serial No. 633,642, and as I claimed the features of this construction in that application, I do not enter into a detailed description thereof herein. The casing 6 for the motor 7 is preferably that described in said application. Between the fan casing 5 and the shoe, I arrange a plate 8, which is provided at one side with an integral hinge member 9 for the handle 10. This hinge member 9 coacts with the hinge member 11 of the handle 10, the members 9 and 11 being provided with suitable knuckles 12 and 13 respectively, adapted to receive the pintle 14. The hinge member 11 is provided with a clamping socket 15 in which the handle is arranged and secured by means of the bolts 16 arranged through ears 17. The hinge member 11 is provided with a stop lug 18 adapted to engage the hinge member 9 to support the body of the cleaner when the same is lifted by the handle.

The plate 8 extends across the top of the shoe to reinforce and support both the shoe and the fan casing. The plate 8 is provided with a central opening registering with openings in the fan casing and in the shoe so that the fan casing is in communication with the interior of the shoe. The fan 19 is mounted centrally above this opening, the fan being supported on the shaft 20 of the motor. The fan consists of a top plate 21 and a bottom plate 22 having radially disposed blades 23 arranged between them. These blades are formed of metal plates and are provided with rivet projections 24 on their edges arranged in openings 25 in the

plates. This provides a very light fan structure and at the same time one which is strong and rigid. The upper plate 21 is provided with a centrally disposed nut 26 which is threaded upon the lower end of the shaft 20, the fan being thus supported and secured to the shaft. This nut 26 is threaded into the flange 27 formed on the plate 21. The plate 22 has a central hole 28 which is supported over and in close proximity to the opening, connecting the fan casing and the shoe chamber. The fan thus constructed, is not likely to become clogged and should string or thread become entangled therein, it is easily disentangled.

To more effectively pick up lint, strings, threads and the like, and to raise the nap of the rug or object being cleaned, I provide a brush 29, the body of which is in the form of bar which is telescoped into the shoe flange and disposed to extend across the discharge opening of the shoe. See Fig. II.

The brush is provided with a retaining member 30 of resilient material, such as rubber, at one end. This brush is effective in picking up lint and string and in loosening up the nap of the carpet or rugs so that the dirt may be more effectively drawn therefrom. The structure is, however, effective without the brush and I sometimes use a shoe plate as shown in Figs. X and XI.

The shoe plate 31 here illustrated has opposed segmental portions 32 provided with upturned flanges at their edges adapted to fit into the flange of the shoe. The front and rear edges of the plate are spaced from the flange leaving openings. The plate is provided with a portion 33 at its front end extending into the extension of the shoe. (See Fig. X.) The plate 31 is provided with upturned flanges 34 at its front and rear edges which prevent the plate engaging any object over which the shoe may be moved and further the shoe having these flanges constitutes a tray to receive heavy objects which the fan may have power to raise from the floor but not sufficient to carry into the dust bag.

The fan casing is provided with a discharge nipple 36 at one side adapted to receive the neck of the dust bag 37. This dust bag is in the form of a tubular casing open at the neck and also at its rear end. The rear end of the dust bag is closed and the bag supported by means of a combination closure and support consisting of a member 38 U-shaped in cross section to receive the folded open end of the bag as shown in Figs. I and VIII, the fold being engaged by the blade-like retaining member 39 which is pivoted at 40 between the arms of the holder.

The arms of the member 38 and the retaining member 39 are provided with holes 41 and 42 at their upper ends adapted to receive the hook 43 of the suspending clip 44. This suspending clip is formed of a strip of sheet metal provided with outturned ears 45 at its ends for the bolt 46. The hook 43 is struck out from the body of the clip as clearly shown in Fig. VII. When the bag is arranged in the closure and the hook engaged in the holes 41 and 42, it will be obvious that the parts are retained in their clamping position as well as being supported.

The handle 10 is tubular to receive the electric cable 47. For convenience in supporting the cable when not in use, I provide the handle with a pair of fingers 48 on which it may be wound as shown in Figs. IV and V. These fingers are supported by clips 49, the clips being preferably strips of sheet metal bent into rings to embrace the handle, the ends of the rings being bent to provide ears 50 between which the fingers are pivotally secured by means of the bolts 51. Thus supported, the fingers may be folded down as shown by dotted lines in Fig. V, when not in use, which is of advantage in packing the handles for shipment and also in using these cleaners. The fingers are supported in their erect position by the lugs 52 which engage the handle as clearly shown in Fig. V.

I have illustrated and described my improvements in an embodiment which I find practicable and simple. I am aware that considerable modification in structural details are possible but as such modifications will no doubt be readily understood by those skilled in the art to which this invention relates, I have not attempted to describe or illustrate the same herein. I wish, however, to be understood as claiming my improvements specifically in the form illustrated as well as broadly within the scope of the appended claims.

Having thus described my invention, what I claim is new and desire to secure by Letters Patent is:

1. A structure of the class described, comprising an approximately cylindrical suction shoe open at the bottom and adapted to be moved over the surface to be cleaned and having an extension on its front side, the edge of the extension being substantially straight, the length of the extension being substantially the diameter of the shoe, said shoe and its extension having a continuous downwardly projecting flange at their edges, and a removable shoe plate having upturned flanges at its side edges telescoping with the flanges of said shoe and provided with an extension extending into said shoe extension, there being a space between the rear edge of said plate and said flange and between the front edge of said plate and said extension, said space being continued at the ends of the extension of the cylindrical portion of the shoe.

2. A structure of the class described, com-

prising an approximately cylindrical suction shoe open at the bottom and adapted to be moved over the surface to be cleaned and having an extension on its front side, the edge of the extension being substantially straight, the length of the extension being substantially the diameter of the shoe, said shoe and its extension having a continuous downwardly projecting flange at their edges, and a removable shoe plate telescoping with the flanges of said shoe and provided with an extension extending into said shoe extension, there being a space between the rear edge of said plate and said flange and between the front edge of said plate and said extension.

3. A structure of the class described, comprising an approximately cylindrical suction shoe open at the bottom and adapted to be moved over the surface to be cleaned and having an extension on its front side, the length of the extension being substantially the diameter of the shoe, the walls of said shoe and its extension comprising a continuous downwardly projecting flange at their edges.

4. A structure of the class described, comprising a shoe open at the bottom and adapted to be moved over the surface to be cleaned, the side and rear walls of the shoe being in the form of a segment of a cylinder, the front wall being substantially straight, the length of the front wall being substantially the diameter of the shoe.

In witness whereof, I have hereunto set my hand and seal in the presence of two witnesses.

EDWARD M. BARNES. [L. S.]

Witnesses:
M. A. LAMBIE,
A. A. ANDERSON.