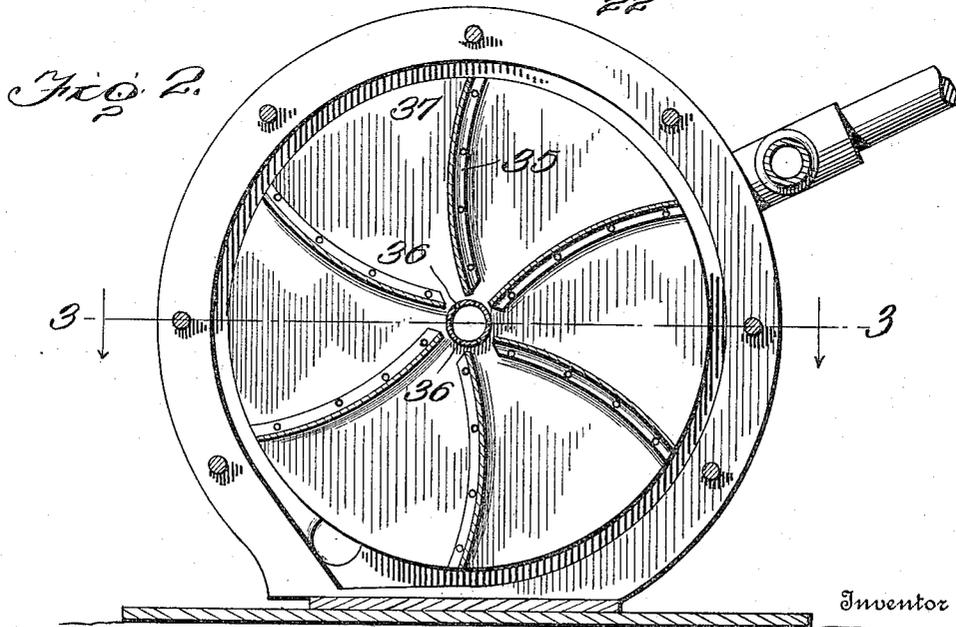
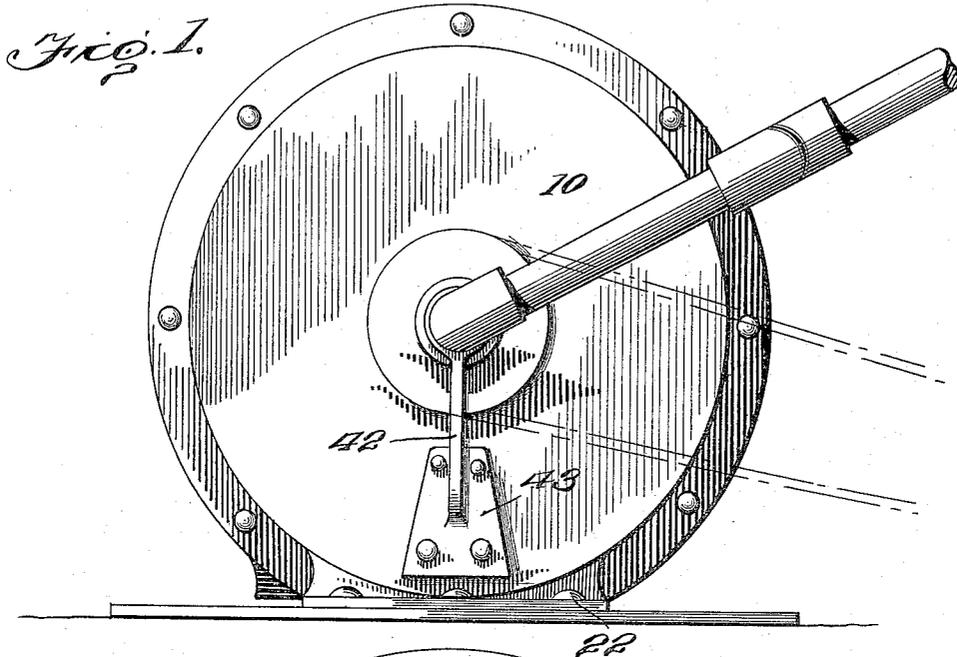


C. H. BEST.
VACUUM CREATOR.
APPLICATION FILED NOV. 15, 1913.

1,155,201.

Patented Sept. 28, 1915.
2 SHEETS—SHEET 1.



Inventor

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Witnesses

C. H. Landon.

[Signature]

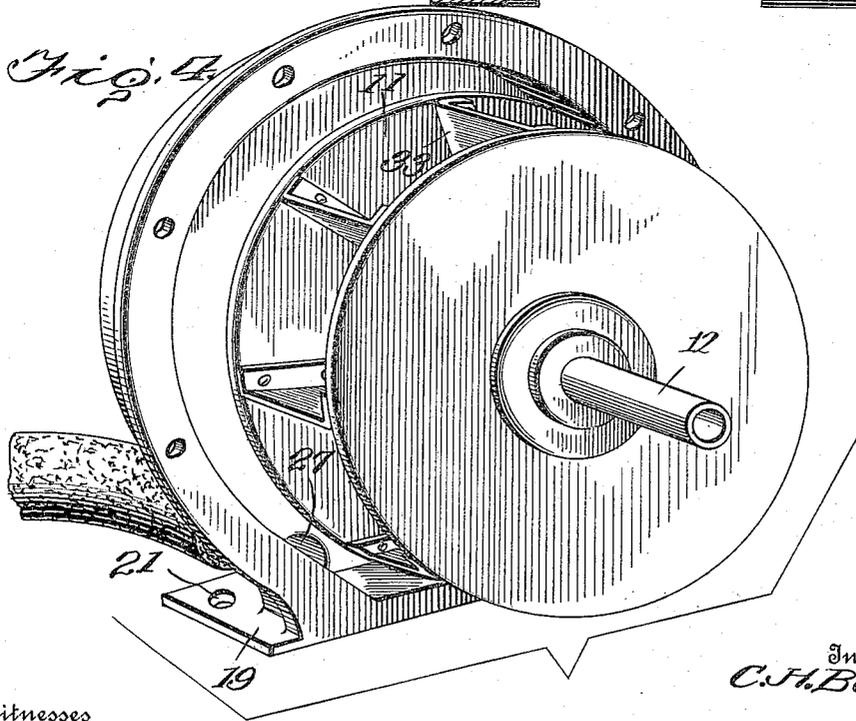
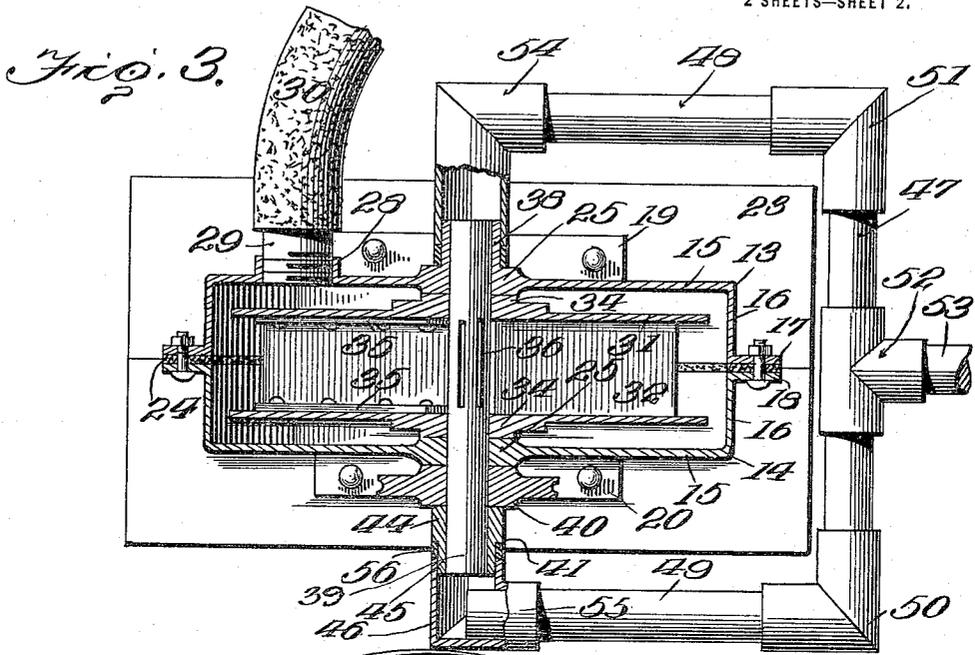
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[Signature] Attorneys

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UNITED STATES PATENT OFFICE.

CHARLES H. BEST, OF MORLAND, KANSAS.

VACUUM-CREATOR.

1,155,201.

Specification of Letters Patent. Patented Sept. 28, 1915.

Application filed November 15, 1913. Serial No. 801,218.

To all whom it may concern:

Be it known that I, CHARLES H. BEST, citizen of the United States, residing at Morland, in the county of Graham and State of Kansas, have invented certain new and useful Improvements in Vacuum-Creators, of which the following is a specification.

The subject-matter of the present invention is directed to new and useful improvements in vacuum creators, and refers particularly to those of the blower or centrifugal fan type.

As its principal object, this invention aims to provide a vacuum creator consisting essentially in a cylindrical casing and a blower fan which is rotatable therein and is mounted on a vented hollow axle, to the terminals of which are connected inlet tubes through which latter member the dust is drawn into the axle and thence sucked through the vents thereof into the casing from which it is subsequently discharged through an outlet opening.

An object of equal importance with the foregoing is to construct the device with such regard to proportion, number and arrangement of parts that it may be cheaply manufactured, will be durable and efficient in its action and may be readily utilized to collect dust or other foreign matter in the well known manner.

It has been found that in many vacuum creators of the centrifugal fan type, the inrush of air at the fan axis causes considerable back pressure, with a resultant material loss of power and efficiency due to the fact that a considerable frictional resistance is set up in changing the direction of the air from the axial point of the fan to the shedding point of the blades.

This invention contemplates, therefore, the overcoming of the above mentioned objectionable feature of centrifugal fan vacuum creators by employing a hollow fan axle or shaft which is slotted at its central portion so that the air will pass from the shaft in equal quantities into the various chambers or compartments produced by the fan blades.

The above and additional objects are accomplished by such means as are illustrated in the accompanying drawings, described in the following specification and then more particularly pointed out in the claims which are appended hereto and forms a part of this application.

With reference to the drawings, wherein

there has been illustrated the preferred embodiment of this invention as it is reduced to practice, and throughout the several views of which similar reference numerals designate corresponding parts, Figure 1 is a side elevation; Fig. 2 is a vertical section taken centrally of the creators; Fig. 3 is a section on the line 3—3 of Fig. 2; and Fig. 4 is a perspective view with one side of the casing removed to more clearly disclose the interior arrangement of parts.

Proceeding now to the description of the drawings, the preferred embodiment of this invention includes broadly a cylindrical casing designated as an entirety by the numeral 10 in Fig. 1, a centrifugal fan or blower 11, and a tubular axle 12.

The casing 10 is, as previously stated, preferably cylindrical in shape and is formed in two sections, designated in Fig. 3 by the numerals 13 and 14. These sections 13 and 14 are formed of any suitable sheet metal and are substantially similar in shape, each consisting of a side wall 15 and an annular rim or flange 16. The flanges or rims 16 of the two sections are equipped with outwardly extending clamping flanges or rims 17 and 18 which are formed with a circumferentially extending series of spaced apertures disposed to receive bolts, screws, rivets or other suitable fastening devices, whereby they may be clamped one against the other to seal the casing.

A pair of base plates 19 and 20 are formed integrally with the respective sections 13 and 14 and extend laterally from the bottom portion thereof, being apertured as at 21 so that bolts or other suitable fastening devices, indicated at 22 in Fig. 1, may be employed in securing this casing to a base block 23. A suitable gasket, indicated at 24, is interposed between the members 17 and 18 in order to insure an air tight joint. The side walls 16 of the sections 13 and 14 are enlarged at approximate central points, as at 25. These enlargements are preferably circular in shape and are centrally apertured so that they may be employed as bearings for the tubular shaft 12. The side wall 15 of the casing 13 is also formed with an opening which, as indicated at 27 in Figs. 3 and 4, is surrounded by an outwardly extending annular flange 28. This flange 28 is internally screw-threaded so that an outlet pipe 29 may be applied to the casing in order to permit the dust which is drawn into the cas-

ing in a manner to be hereinafter described to be discharged through a discharge tube 30. This discharge tube 30 is preferably in the nature of a rubber or other type of flexible tubing, but if so desired it may be formed from any other suitable material.

The blower fan 11 consists in a pair of circular side plates 31 and 32 and a plurality of blades 33. The side plates 31 and 32 of the fan are each provided at approximately central points of their outer faces with bosses indicated at 34. These bosses 34 serve to space the side plates 31 and 32 from the adjacent inner faces of the side walls 15 and are arranged to bear against the inner faces of the bearings 25 and 26. These bosses 34 are provided with central openings so that the side plates may be positioned on the tubular axle 12. The fan blades 33 are, of course, arranged between the side plates 31 and 32 and are preferably formed of relatively light sheet metal as are the side walls 31 and 32. These fan blades are longitudinally curved so that an air pocket will be produced by each blade, thus increasing the strength of the blast through the outlet opening 27. In the preferred embodiment, the longitudinal edges of the blades are bent at right angles to the main portion of the blade to produce flanges 35. These flanges 35 are formed with spaced apertures which receive bolts, rivets or other suitable fastening devices whereby the blades may be secured in the desired position between the plates 31 and 32.

In practice it has been found that the fan is most efficient when six blades are employed, but it is, of course, obvious that if so desired any desired number of blades may be used without departing in any way from the spirit of the invention inasmuch as this is a purely arbitrary matter and one to be governed entirely by the conditions under which the device is to be employed.

As hereinbefore set forth, the shaft 12 consists of a metallic tube which is formed with a number of slots at its central portion. With respect to this term "central portion," reference is had to a central point in that part of the shaft 12 which is included between the walls of the casing 10. These slots are, as indicated at 36, relatively narrow and are in length approximately equal to the space comprehended between the side walls 31 and 32. When six blades are provided for the fan, it is necessary to form six slots in the fan shaft 12, in order that each chamber 37 formed between the adjacent fan blades 33 may be in communication with the interior of the axle 12.

That terminal of the shaft 12 which extends through the bearing 25 of the side wall 13 is housed within an annular flange 38. This member 38 is adapted to receive an elbow formed on the inlet pipe, as will

be hereinafter more fully disclosed. The other terminal of the shaft extends through the bearing 26 and terminates a greater distance exteriorly of the casing than does the first described terminal, so that it may receive a belt wheel, indicated at 40. The terminal 39 of the axle is journaled in a bearing 41 which is formed at the upper terminal of an upwardly extending bracket arm 42 which latter member carries an integrally formed attaching plate 43.

The attaching plate 43 is riveted or secured by any other suitable fastening devices to the side wall 15 of the section 14, as will be most readily observed upon reference to Fig. 1. Referring now to Fig. 3, it will be noted that the bearing 41 includes an inner enlarged portion 44 and an outer reduced portion 45. This particular formation of the bearing 41 is necessary in order that the elbow 46 of the inlet pipe may be applied to the bearing and in communication with the terminal 39 of the tubular axle 12.

The preferred form of inlet pipe is substantially U-shaped and consists in three terminally threaded pipe sections 47, 48 and 49. These three pipe sections are connected in the shape of a U by means of elbow joints 50 and 51. A T coupling 52 is interposed in the pipe section 47, which corresponds to the bight of the U, so that a pipe member 53 may be positioned to receive the dust collecting tube. The free terminals of the pipe sections 48 and 49 are also equipped with elbows, indicated at 54 and 55, respectively. These members 54 and 55 are adapted to be respectively mounted on the flange 38 and the reduced portion 45 of the bearing 41.

It will now be apparent upon reference to Fig. 3 particularly that the partial vacuum which is created in the casing upon the rotation of the fan 11 acts to draw the dust laden air through the pipe 53, and that the air divides into two equal currents one of which passes through the pipe 48 and the elbow 54 into the axle, and the other of which passes through the pipe 49 and the elbow 55 and into the axle. Packing rings, indicated at 56, may be interposed between the terminals of the elbows 54 and 55 and the flanges 39 and member 44 in order to insure an air tight joint between the inlet pipe and the tubular axle.

From the foregoing description, it will be noted that the inlet pipe is so designed that it may be swung up or down to any desired angle so that the pipe 53 to which the suction nozzle is attached may be depressed when a floor is being cleaned, or elevated when a picture or the like is being operated upon, the said pipe in effect, providing a handle for the device.

In concluding the description of the drawings, it may be well to again direct

particular attention to the fact that the vacuum creator of the present invention is extremely simple in construction and may, therefore, be cheaply manufactured.

5 Relative to the operation of the device, it will, of course, be understood that the belt wheel 40 is connected in the well known manner to any convenient power source so that upon the rotation of the fan the neces-
10 sary suction will be produced as a result of the exhausting of the air in the casing 10 through the outlet 30. This discharge pipe 30 is, of course, connected to some suitable form of dust collector.

15 In reduction to practice, it has been found that the form of this invention illustrated in the drawings, and referred to in the above description as the preferred embodiment, is the most efficient and practical; yet
20 realizing that the conditions concurrent with the adoption of this device will necessarily vary, it is desired to emphasize the fact that various minor changes in details of construction, proportion and arrange-
25 ment of parts may be resorted to, when required, without sacrificing any of the advantages of this invention, as defined in the appended claims.

What is claimed is:—

30 1. A device of the character described comprising a cylindrical casing, a hollow axle journaled in and projecting beyond the sides of the casing, said axle being pro-
35 vided at its center with longitudinally extending slots, a fan carried by the axle and consisting of a pair of side plates fixed to the axle at the ends of the slots and having their edges near the peripheral wall of the casing, and a plurality of singly disposed
40 outwardly diverging substantially radial blades fixed to and disposed between the side plates and extending from the axle to the edges of the said side plates to define intermediate compartments, each of which
45 is wider at its outer extremity than at its

inner extremity and communicates at its inner extremity with one of the slots in the axle, and a substantially U-shaped inlet pipe providing a handle for the device and having its terminals rotatably mounted ad- 50 jacent and concentric with the ends of the axle and arranged to form fluid-tight communication therewith.

2. A device of the character described including a cylindrical casing having bosses 55 formed upon its side walls at the center thereof, one of said bosses being formed with an outwardly projecting sleeve, a bracket supported from the opposite side of the casing and provided at its upper end 60 with a bearing sleeve spaced from and concentric with the boss on the adjacent side of the casing, a hollow axle journaled in the bosses on the casing and having one end 65 journaled in the sleeve projecting from the first-mentioned boss and its other end journaled in the sleeve at the upper end of said bracket, the said axle being provided with a plurality of longitudinal slots between the sides of the casing, a driving wheel fixed 70 upon the axle between the bracket supported sleeve and the adjacent side of the casing, a fan fixed to the axle within the casing and comprising side plates, and substantially radial singly disposed blades se- 75 cured to and between the said side plates and extending from the axle to the outer edges of said side plates, the spaces between adjacent blades each communicating with one of the slots in the axle, an outlet pipe 80 leading from the casing eccentric to the axle, and an inlet pipe having spaced terminals rotatably fitted over the ends of the sleeves in which the axle is journaled.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES H. BEST. [L. s.]

Witnesses:

KENBEN J. COOP,
PEARLE COVALT.