A. SAUER.

SUCTION APPARATUS.

APPLICATION FILED DEC. 14, 1910.

1,006,291. Patented Oct. 17, 1911.

Fig. 1.

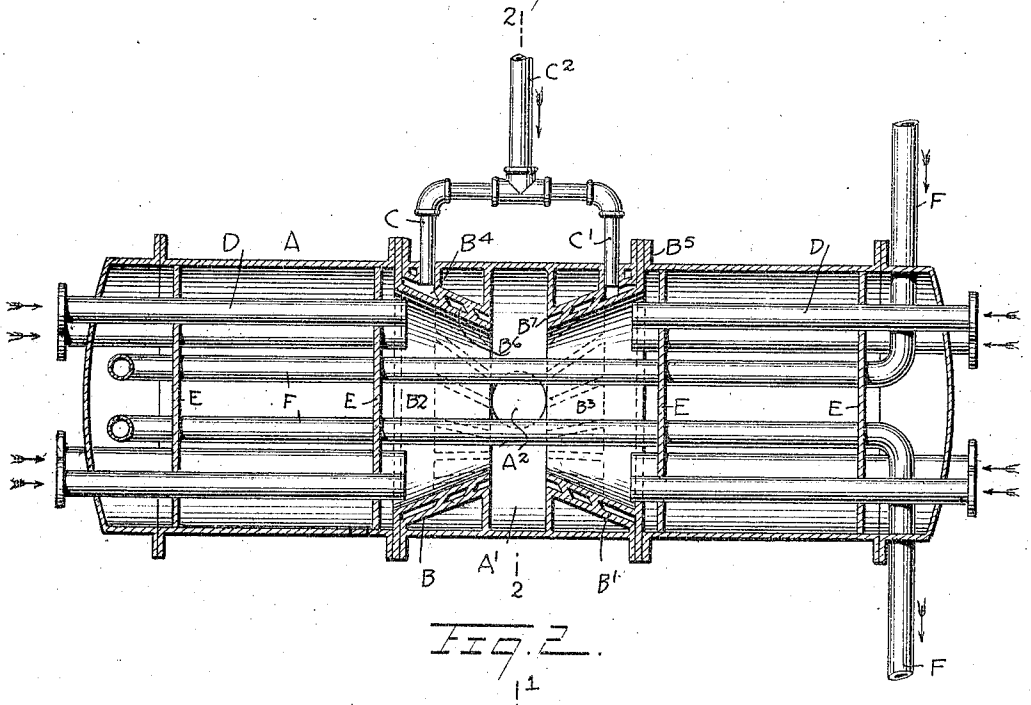
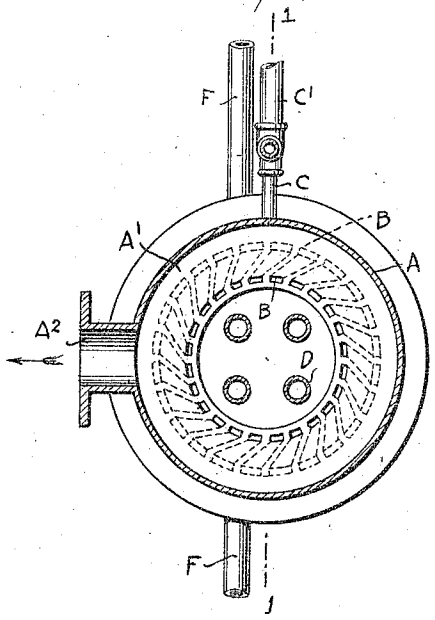


Fig. 2.



WITNESSES

H. D. Walker

Rud. J. Hoskins

INVENTOR

Adelbert Sauer

BY Munn & Co

ATTORNEYS

UNITED STATES PATENT OFFICE.

ADELBERT SAUER, OF PITTSBURGH, PENNSYLVANIA.

SUCTION APPARATUS.

1,006,291. Specification of Letters Patent. Patented Oct. 17, 1911.

Application filed December 14, 1910. Serial No. 597,327.

To all whom it may concern:

Be it known that I, ADELBERT SAUER, a citizen of the United States, and a resident of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented a new and Improved Suction Apparatus, of which the following is a full, true, and exact description.

The object of the invention is to provide a new and improved suction or vacuum apparatus, for heating, ventilating, refrigerating and other purposes.

For the purpose mentioned use is made of a suction chamber provided with an annular passage connected with a steam supply and from which lead a number of spiral passages into the suction chamber to produce a vortex blast in the suction chamber.

A practical embodiment of the invention is represented in the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in both views.

Figure 1 is a sectional side elevation of the suction apparatus, the section being on the line 1—1 of Fig. 2; and Fig. 2 is a cross section of the same on the line 2—2 of Fig. 1.

Within a suitably constructed shell A are arranged two oppositely-disposed suction devices B and B′ having suction chambers B^2, B^3, preferably of conical shape, with the apex ends toward each other, as plainly indicated in Fig. 1. In the walls of the suction chambers B^2 and B^3 are formed annular passages B^4, B^5, connected by pipes C, C′ with a steam supply pipe C^2 connected with a boiler or other suitable source of steam supply. From the annular passages B^4, B^5 lead spiral passages B^6, B^7 into the space A′ formed in the shell A between the apex ends of the suction devices B and B′. An outlet A^2 leads from the space A′, to carry off the steam and the air or other fluid drawn into the space A′ by the suction devices B and B′.

When the device is to be used for ventilating purposes, for instance, use is made of pipes D extending through the ends of the shell A to terminate in the base ends of the suction chambers B^2 and B^3, the outer ends of the said pipes D being connected to rooms or other places to be ventilated. Now when steam is turned on in the pipe C^2 a vortex blast is produced in the suction chambers B^2, B^3 owing to the steam passing through the annular passages B^4, B^5 and the spiral passages B^6, B^7 into the space A′. It is evident that by the production of this vortex blast, a suction is produced in the chambers B^2, B^3 and consequently a suction takes place in the pipes D to draw in the foul air from the room or other place to be ventilated, and this foul air commingling with the steam is discharged through the outlet A^2 to a place of discharge. The pipes D are supported in the shell A by cross plates E, as plainly indicated in Fig. 1.

When it is desired to use the apparatus for heating and other purposes, use is made of a circulating pipe F extending lengthwise in the shell and passing through the suction chambers B^2, B^3 when the pipe is heated by the steam.

It is understood that when the apparatus is used for ventilating purposes, the foul air drawn into the space A′ commingles with the steam and the mixture passes out of the outlet A^2 to a suitable place of discharge or is conducted to other machinery or apparatus to be used as motive power, etc.

In using the apparatus for heating purposes steam is caused to circulate through the circulating pipe F to heat the air drawn in by the suction devices B, B′ through the air supply pipes D. For refrigerating purposes, the liquid to be cooled is caused to circulate through the pipe F and air is passed into the apparatus under a high velocity by way of the pipes D and through the suction action of the steam in the chambers B^2, B^3. The air in this passage through the chambers B^2, B^3 comes in contact with the circulating pipe F and thus cools the same and the liquid flowing through the same.

In using the apparatus for the manufacture of artificial ice use is made of shallow trays containing water and fluid in the suction chambers B^2, B^3, so that the inrushing air traveling at a high velocity passes over the water and freezes the same.

The apparatus may be used as a steam condenser, and in this case exhaust steam is conducted through the pipe F, and the velocity of the inrushing air by way of the pipes D and passing over the pipe F cools the same and causes the steam to condense.

Although I have described a few uses of the apparatus, it is evident that I do not limit myself to such use, as the apparatus may be used for other purposes.

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

1. An apparatus of the class described, comprising a shell, a pair of conical suction chambers arranged in the shell and having their apex ends opposite each other and spaced apart, each of the suction chambers being provided in its wall at the base end with an annular passage, and spiral passages formed in the wall of the suction chamber and extending from the said annular passage to the apex end of the suction chamber, a steam pipe connected with the annular passages of the said suction chambers, an outlet leading from the said shell at a point between the apex ends of the said suction chambers, and pipes extending through the ends of the shell and terminating in the base ends of the said suction chambers.

2. An apparatus of the class described, comprising a shell, a pair of conical suction chambers arranged in the shell and having their apex ends opposite each other and spaced apart, each of the suction chambers being provided in its wall at the base end with an annular passage and spiral passages formed in the wall of the suction chamber and extending from the said annular passage to the apex end of the suction chamber, a steam pipe connected with the annular passages of the said suction chambers, an outlet leading from the said shell at a point between the apex ends of the said suction chambers, and a circulating pipe extending in the said shell and passing through the said conical suction chambers.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ADELBERT SAUER.

Witnesses:

HERMANN J. VOEGTH,

L. P. HOFFMANN.