

J. ZELLWEGER.  
Jet Blower or Exhauster.

No. 223,830.

Patented Jan. 27, 1880.

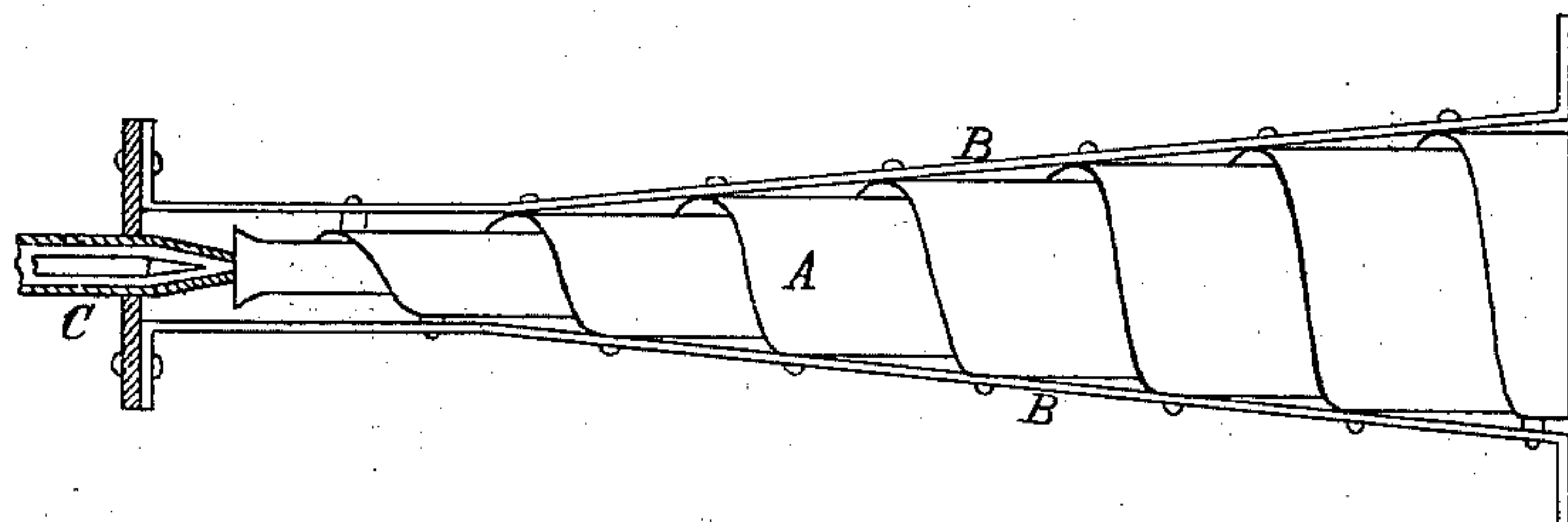


Fig. 1.

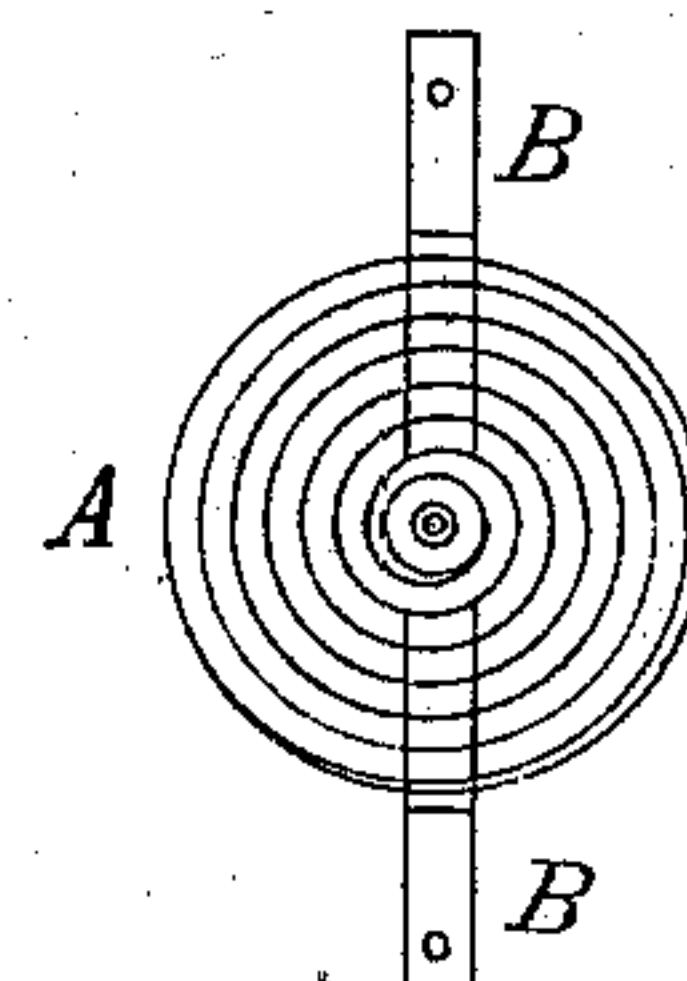


Fig. 2.

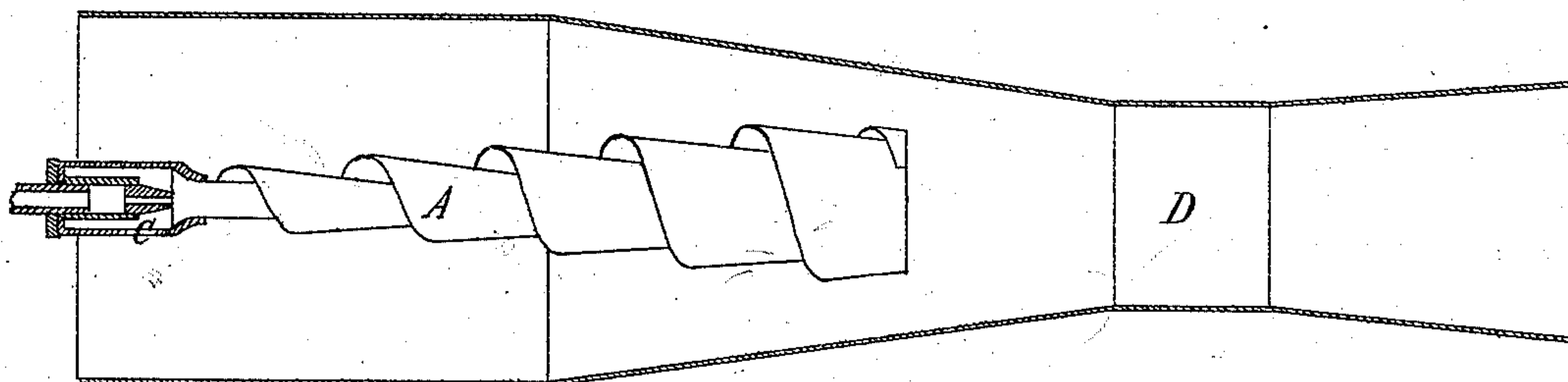


Fig. 3.

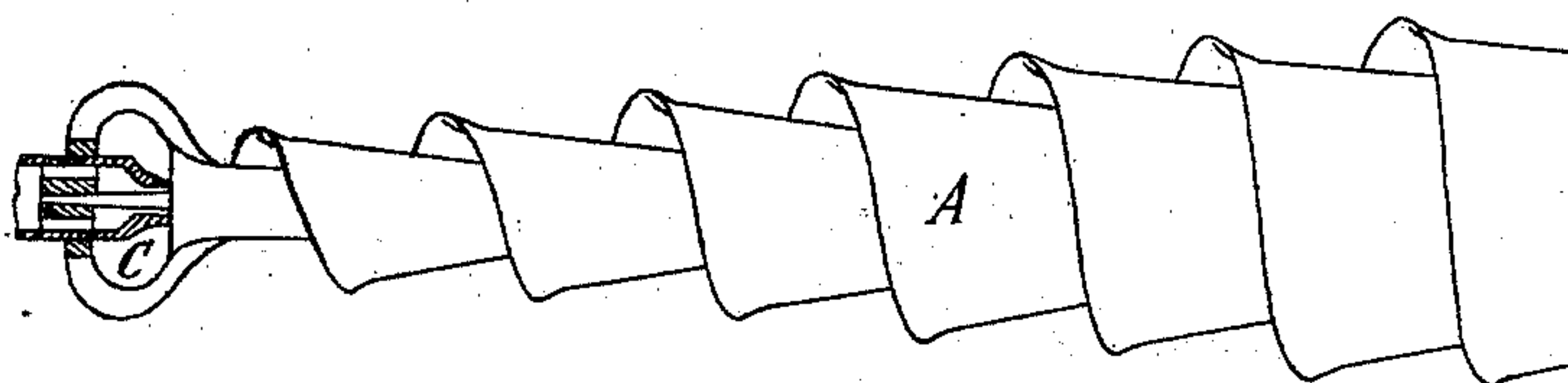


Fig. 4.

Witnesses:

Charles Jarvis Bates  
Lucius Hyman Doomer

Inventor:

John Zellweger.

# UNITED STATES PATENT OFFICE.

JOHN ZELLWEGER, OF LOUISVILLE, KENTUCKY.

## JET BLOWER OR EXHAUSTER.

SPECIFICATION forming part of Letters Patent No. 223,830, dated January 27, 1880.

Application filed October 31, 1879.

*To all whom it may concern:*

Be it known that I, JOHN ZELLWEGER, of Louisville, in the county of Jefferson and State of Kentucky, have invented a new and useful Improvement in the Construction of Jet Blowers or Exhausters, of which the following is a specification.

The invention relates to aspirators of jet blowers or exhausters.

Heretofore the aspirators for jet blowers or exhausters have been made either in the shape of open cylindrical or conical tubes, with a pressure-nozzle for the jet at one end, or they have consisted of a series of independent and separate funnel-shaped nozzles of different sizes, arranged with their axes on a straight line, and so that the small (discharge) end of one extends into the large (receiving) end of the next larger nozzle, the steam passing from the smallest to the largest, and drawing in air through the annular space between the nozzles.

In neither of these constructions of the aspirator is the full force of the steam-jet utilized, since it has to impart motion to the air that enters the aspirator suddenly, either to the whole mass at once or to parts of the mass at intervals. What is gained in the second case over the first by dividing the total quantity of air into a limited number of parts is lost by the successive enlargements and contractions of the area through which the blast-current has to pass.

The object of my invention is to admit the air to the steam gradually, and, further, to provide for a steadily-increasing area for the blast-current.

The invention consists in the formation of the aspirator for jet blowers or exhausters in the shape of a cone, and having a continuous spiral chamber.

In the accompanying drawings, in which similar letters of reference indicate like parts, Figure 1 represents a side elevation of a jet blower or exhaustor of sheet metal with parallel spiral turns embodying my invention. Fig. 2 represents an end elevation of same. Fig. 3 represents a side elevation of a spiral jet-blower of sheet metal with converging or tapering spiral turns. The blower is here shown as placed inside of a tube or air-case.

Fig. 4 represents a side elevation of a blower of cast metal with tapering spiral turns.

Letter A indicates aspirator. B indicates side bars. C indicates steam or pressure nozzle. D indicates air-case, pressure or suction tube.

An aspirator of this kind may either be cast in the proper form, or it may be made out of a suitable strip of sheet metal wound into the proper form, and the several spiral turns secured by bolts or rivets, either to each other or to two or more longitudinal bars, B. The pressure-nozzle C should be attached firmly to the small end of the aspirator A. The discharge of steam may be regulated either by a valve in the supply-pipe or by a stopper in the pressure-nozzle itself. The radial distances between every two successive spiral turns of the cone spiral may be equal, or increasing or decreasing from one end of the aspirator toward the other. The pitch or width of the spiral turns may also be equal or varying, and, as a consequence, the sides of the aspirator may be straight or curved; further, the several spiral turns may be parallel, as in Fig. 1, or converging, as in Figs. 3 and 4, or they might be diverging. The space between the spiral turns where the air enters the aspirator may be closed (especially for parallel spiral turns) by stoppers fitting the spiral turns of the cone spiral, each reaching halfway around and sliding over the outside of the aspirator. Two or more such stoppers on the same side might be attached to one rod and be moved simultaneously. For aspirators with tapering spiral turns the air-inlets may be closed by a cone-spiral spring fitting over one or more spiral turns of the large end of the aspirator and movable around the common axis.

Instead of steam, any other gas under compression may be used to impart motion to air or other gas through the blower or aspirator. For example, air inclosed in a vessel may be brought to a certain pressure by heat and then used, or an explosive may be employed to furnish compressed gas. Water under pressure may also be used to furnish the motive power instead of steam, &c.

A water-jet may be used to exhaust and condense waste steam or vapor, in which case a core in the shape of a cone may be placed



inside of the aspirator, so that its sides are  
near the inner edges of the spiral turns of the  
cone spiral, leaving sufficient room between  
the aspirator and the core for the passage of  
5 the water without obstruction.

The jet of steam, air, or water, &c., may be  
a solid or a hollow cylinder or cone.

One or more jet blowers or exhausters may  
be placed inside of a tube or air-case, which  
10 may be contracted to near the size of the blast  
a short distance beyond the blowers.

What I claim is—

The combination of a cone-shaped aspirator,  
A, having a continuous spiral chamber, with a  
nozzle, C, substantially as described, and for 15  
the purposes set forth.

JOHN ZELLWEGER.

Witnesses:

JOSEPH STÜSSY,  
WILHELM BLUM.