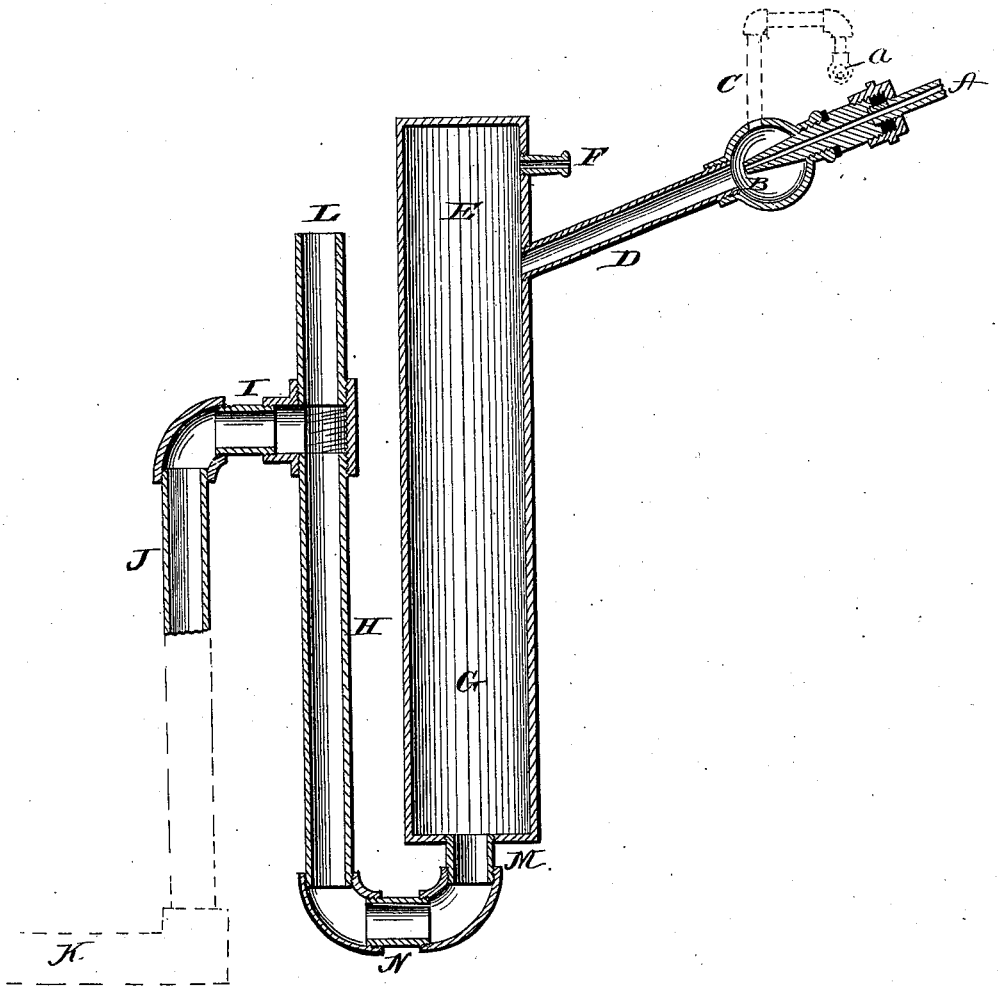
R. WILSDON.

Machine for Purifying and Compressing Air.

No. 202,083. Patented April 2, 1878.



WITNESSES

F. L. Ourand

Wm. H. Galt

INVENTOR

Richard Wilsdon

Howard Mason

ATTORNEYS

UNITED STATES PATENT OFFICE.

RICHARD WILSDON, OF TOLEDO, OHIO.

IMPROVEMENT IN MACHINES FOR PURIFYING AND COMPRESSING AIR.

Specification forming part of Letters Patent No. **202,083**, dated April 2, 1878; application filed January 16, 1878.

To all whom it may concern:

Be it known that I, RICHARD WILSDON, of Toledo, in the county of Lucas, and in the State of Ohio, have invented certain new and useful Improvements in Hydraulic Air Purifying and Compressing Apparatus; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing, and to the letters of reference marked thereon, making a part of this specification.

The nature of my invention consists in the construction and arrangement of a hydraulic air purifying and compressing apparatus, as will be hereinafter more fully set forth.

The annexed drawing represents a vertical section of my invention.

The object of this invention is to purify air by washing through water, and compress the same by means of water-pressure. It is designed for use in cities where there are water-works, although the same can be used where there is a tank elevated sufficiently to give pressure.

A represents the water-supply pipe, through which water is supplied under pressure to a nozzle or jet, B, which is made with a very small opening—say, about one-twelfth of the diameter of the supply-pipe. As the water is forced through this small opening into a pipe, D, it forms a vacuum, which causes a constant flow of air through the pipe C, and while the air is passing through the pipe D it is thoroughly washed by the constant spray of water before it reaches the chamber E G. On entering this chamber the water descends to the lower part, and the purified air ascends to the upper part of the chamber, E representing the air-space, and G the water-space, when the apparatus is not under pressure.

F is the outlet for the purified air, through which it may be conveyed in pipes any distance.

As the water is thrown into the chamber E G and descends it passes through the pipes M and N into the column H, until it rises in the column to the overflow-pipe I, when the water rests at a level in the column H and chamber E G when the apparatus is not working under pressure.

J is a conducting-pipe leading to the sewer K, to carry off the overflow of water. L is a waste-pipe for air to pass out when the outlet F is closed and the apparatus is working under pressure, and also to prevent the parts H, I, and J from acting as a siphon, which would be the case were it not for this pipe, when the pipe J extends below the bottom of the column H.

The air-supply pipe C is provided at its inlet with a valve, *a*, to prevent air from forcing back and out there when working under heavy pressure, or water and air, should the sewerage become obstructed.

The pipe C may be made of any length, so as to reach any point from which it is desired to take fresh air.

When it is desired to work the apparatus under pressure the air-outlet pipe F is closed or choked to a small opening; but when connected to a closet-cock or vessel to which pressure is to be added this is not necessary. This done, the pressure upon the top of the water in the chamber E G forces it down and through the pipes M N into the column H, until the water is all forced out of the chamber G and pipe M, and until the air can escape through the pipe N, and up through the column H, and out at L.

It will readily be understood that for every twenty-eight inches in height of water in the column H, when there is no water in the chamber G, the pressure will be one pound to the square inch, and when this column is made fifty-six inches long the pressure will be two pounds to the square inch, and so on.

When it is desired to increase the pressure to any desired limit that can be attained by the pressure of water, it is only necessary to lengthen the pipe M and column H; or it can be effected by lengthening the column H and pipe J and putting in a series of connecting-pipes, I, provided with stop-cocks, closing the lower one, and forcing the column to any height. In this way the apparatus can be made adjustable, so as to have one pound pressure or more, as desired.

The apparatus may be constructed of common iron pipe and fittings, except the nozzle or jet B and valve *a*, which should be made of

brass or other suitable material; or it may be made of brass, copper, tin, or other suitable material, and of any desired proportions.

Among the many uses to which this apparatus is applicable are the following, although it may be used for other purposes also, viz: to furnish pure air and pressure upon beer-kegs when on draft; forcing beer or other liquids from casks in breweries, &c., to kegs; ventilating refrigerators, and for forcing currents of cold air through them by running the discharge-pipe F through ice-packs, by which means the temperature may be kept nearly at freezing; or can use heated air for drying, &c.; and many other uses not necessary to enumerate.

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

The combination of the water-pipe A with nozzle or jet B, pipe D, air-inlet C, chamber E G, with air-discharge F, water-pipes M, N, I, and J, and the column H, with outlet L, all constructed and arranged substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 13th day of December, 1877.

RICHARD WILSDON.

Witnesses:
H. W. HIPP,
A. T. BARNES.