(No Model.)

G. W. SCOVILL.

PNEUMATIC MOTOR.

No. 330,265. Patented Nov. 10, 1885.

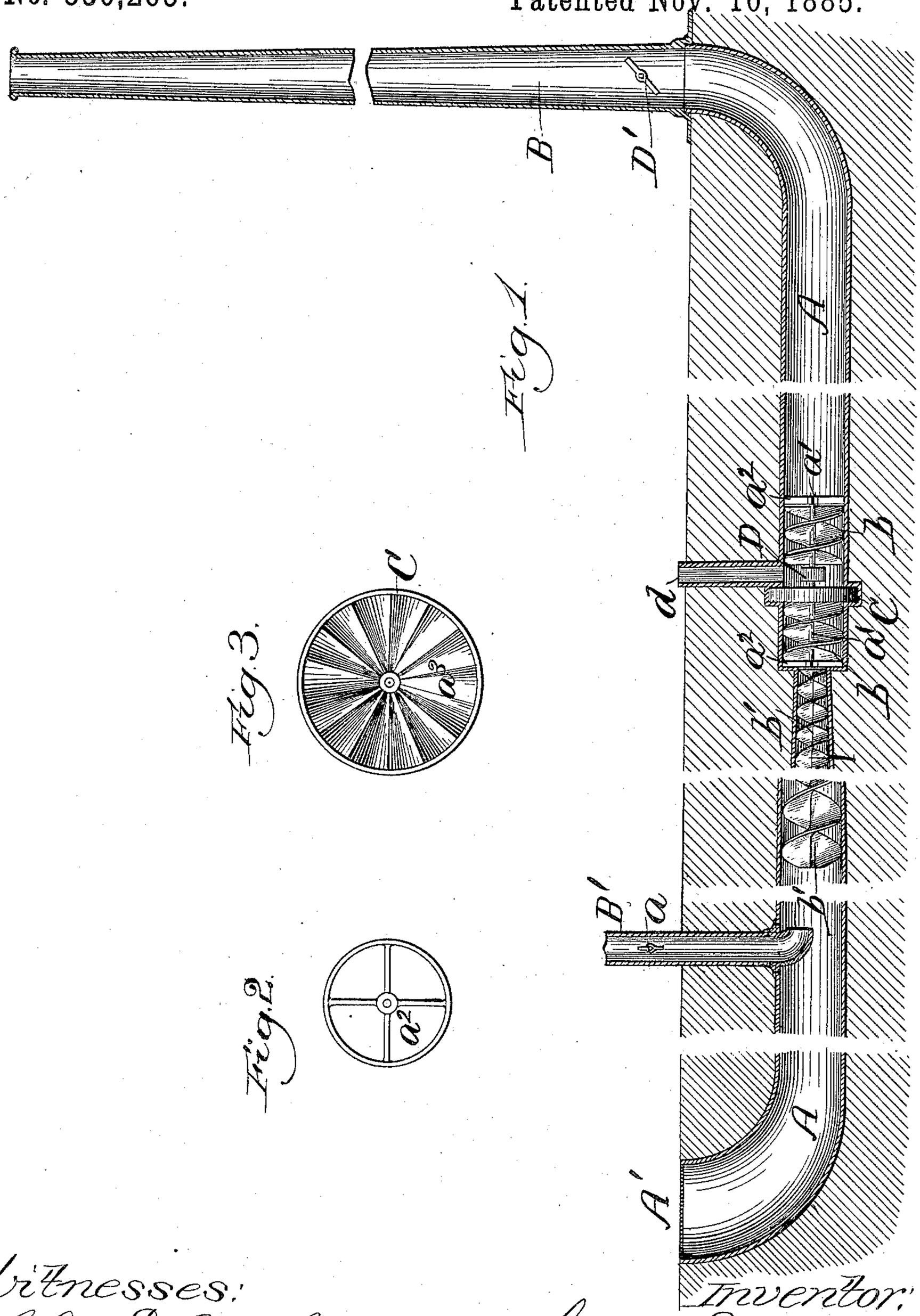

Fig. 1.

Fig. 3.

Fig. 2.

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UNITED STATES PATENT OFFICE.

GEORGE W. SCOVILL, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO CHARLES WONDRIES, JR., OF SAME PLACE.

PNEUMATIC MOTOR.

SPECIFICATION forming part of Letters Patent No. 330,265, dated November 10, 1885.

Application filed August 14, 1885. Serial No. 174,372. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. SCOVILL, of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in a Pneumatic Motor, of which the following is a full, clear, and exact description, that will enable others to make and use the same, reference being had to the accompanying drawings, forming a part of this specification.

The object of this invention is to provide an inexpensive motive power for the purpose of operating all kinds of light machinery used in various manufacturing establishments, the source of power being a motor or air wheel located in a cylindrical conduit or passage through which a current of air circulates and sets the wheel in motion, a spiral conveyer or propeller being placed on one or both sides of the motor-wheel, and so arranged as to accelerate the velocity and force of the air-currents, and thereby increase the power developed by the motor or air wheel.

Figure 1 is a longitudinal section embodying my improved features. Fig. 2 shows the form and manner of supporting the journal-bearings for the motor-wheel in the conduit-passage, and Fig. 3 a plan of the fan or motor wheel.

Referring to the drawings, A represents a conduit or horizontal passage, having the inlet-opening A′, which may terminate flush with the surface or extend to some point above the same and be enlarged or made flaring. This horizontal passage or conduit will usually be one foot or more below the surface, and of any length that will produce the best results in increasing the velocity of the air-currents rushing through. The passage A may be of a variable or gradually-contracted diameter, and communicates with the vertical air-shaft or chimney B, which should be of some considerable height. The auxiliary air-pipe B′ may extend some way above the surface and communicate with the main conduit or passage, and provide a means for introducing atmospheric air of a greater rarity than the larger volume in the main conduit. The inner bent end of the pipe B′ is contracted at the point of discharge, so as to increase the velocity of the air flowing through.

a represents a valve, whereby the quantity of air admitted may be regulated or the auxiliary passage entirely closed. Any number of these auxiliary air pipes may be arranged along at intervals, either in a vertical or inclined position.

The motor-wheel C is mounted on the shaft *a′*, supported in the bearings a^2, and arranged in the main conduit, as illustrated in Fig. 1. The construction of this motor-wheel is somewhat similar to the ordinary ventilator-wheel. The spiral or oblique vanes a^3, placed between the hub and the rim, are set at an angle relative to the axis of motion. The air rushing through sets this wheel in motion and developes power in accordance with the velocity of the air-currents and the diameter of the motor-wheel. On each side of the motor-wheel, and mounted on the same shaft, are arranged the continuous screw-spirals *b*, which provide an increased surface for the action of the air and increases its force by imparting a winding course both before reaching and after leaving the motor-wheel. A second spiral body, *b′*, is arranged between the motor-wheel and the inlet-opening. This second spiral will ordinarily be stationary, but may be arranged to rotate if it is found that better results can thereby be obtained. By this arrangement the air rushing through will take a winding course, which will have a tendency to increase its effective force before it strikes the revolving spirals mounted on the same shaft and rotating with the motor-wheel.

D is a band-pulley, from which a belt may be run through the passage *d* for the purpose of transmitting the motion to any desired point.

D′ is a valve for closing the main air-passage.

The main conduit or passage may be inclined at any angle, instead of being horizontal, as shown, and any number of motor-wheels may be arranged at different points, either in the horizontal or vertical passage.

The spiral air-conveyers may in some cases be entirely dispensed with, as the motor-wheel will rotate and develop a certain amount of power without such auxiliary aid.

I do not of course confine myself to the precise construction and arrangement herein shown, but may make such changes as practical working will suggest without departing

from the essential features or spirit of my invention.

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

1. The combination, with a conduit or air-passage, of a motor-wheel located therein and an auxiliary air pipe or pipes located at a point between said motor-wheel and the main inlet, and communicating with said conduit, whereby atmospheric air is introduced at different points, substantially as and for the purpose set forth.

2. The combination, with a conduit or air-passage communicating with an air-shaft or chimney, of a motor-wheel located in said conduit and a screw-spiral located on one or both sides of said motor-wheel and adapted to rotate therewith, as set forth.

3. The combination, with a conduit or air-passage, of a motor-wheel located therein and a stationary screw-spiral arranged in said passage at a point between said motor-wheel and the inlet-opening to said conduit, substantially as and for the purpose set forth.

4. The combination, with a conduit or passage communicating with an air-shaft or chimney, of a motor-wheel located in said passage and adapted to be put in motion by the force of the air rushing through, a screw-spiral arranged to rotate with said motor-wheel, and a stationary spiral placed in said conduit or passage at a point between said rotating spiral and the inlet opening into said conduit, substantially as herein set forth.

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Witnesses:
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