W. S. Colwell, 2. Sheets. Sheet. 1.

Fan Blower.

No. 107,665. Patented Sep. 27. 1870.

FIG. 1.

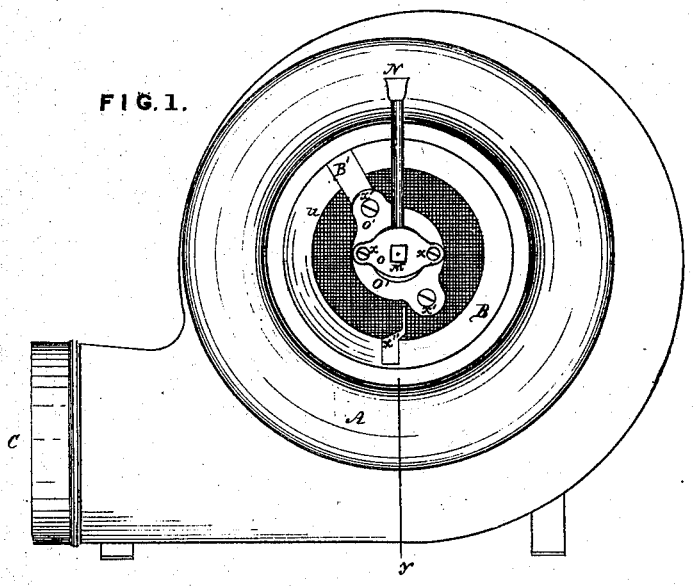
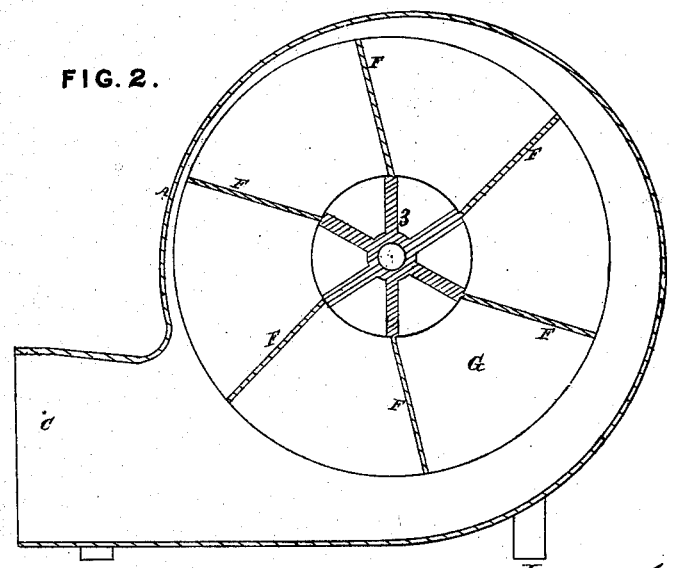


FIG. 2.



Witnesses,

James L. Johnston

Geo. H. Thomas

Inventor.

W. S. Colwell

2 Sheets. Sheet 2.

W. S. Caldwell,

Fan Blower.

No. 107,665. Patented Sept. 27, 1870.

FIG. 3.

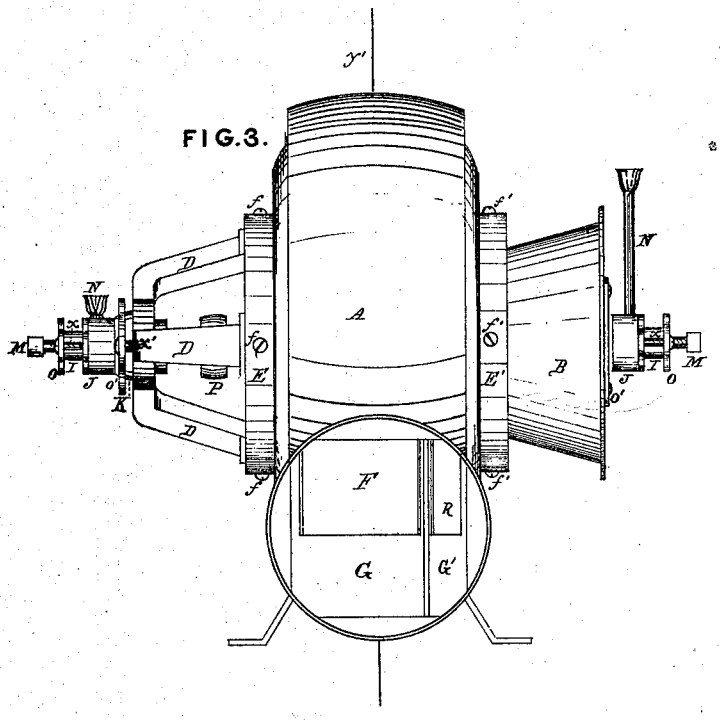


FIG. 4.

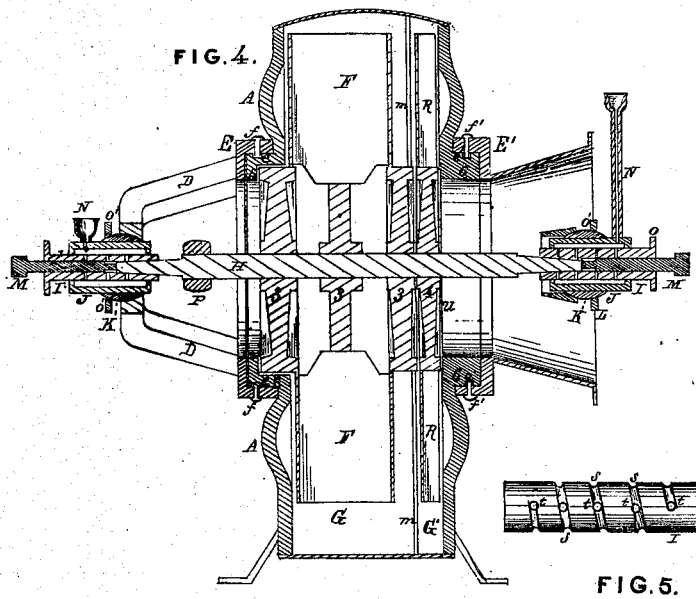


FIG. 6.

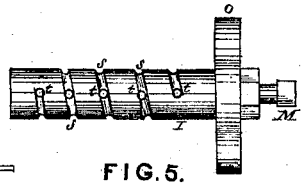


FIG. 5.

United States Patent Office.

WILLIAM S. COLWELL, OF PITTSBURG, PENNSYLVANIA.

Letters Patent No. 107,665, dated September 27, 1870.

IMPROVEMENT IN BLOWERS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, WILLIAM S. COLWELL, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Fans or Blowers; and I 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 and figures of reference marked thereon.

The nature of my invention consists in providing a fan or blower with two or more chambers, in one of which are floats, which are set at oblique angle to the axis of the fan-shaft, and the other chamber or chambers provided with a clearing-arm or arms, which rotate with the fan-shaft.

My invention also consists in providing the chamber in which the floats rotate, with a revolving screen, consisting of a perforated disk or net-work, and providing said screen with a stationary cleaner.

My invention further consists in providing the fan-shaft with adjustable supports and bearings, which can be set and adjusted to the journal of the fan-shaft as it and its bearings wear away.

To enable others skilled in the art to make and use my invention, I will proceed to describe more fully its construction and operation.

In the accompanying drawing which forms part of my specification—

Figure 1, sheet A, is a side elevation of my improvement in fans and blowers.

Figure 2 is a vertical and longitudinal section of the same, when cut through at line *y'* of fig. 3, shown in sheet B.

Figure 3 is an end elevation of the fan.

Figure 4 is a vertical section of the same when cut through at line *y* of fig. 1, shown in sheet A.

Figure 5 is a side view of the journal-bearing for the fan-shaft.

Figure 6 is an end view of the clamp or ball-socket, used for holding the oil-chamber and journal-bearing in position.

In the accompanying drawing—

A represents the case or shell of the fan or blower.

B represents a bell-mouth throat for the ingress of air and other matter, which may be drawn into the shell by the suction caused by the rotating of the floats F, which air and matter are forced out through the throat or outlet C, and may be forced and conveyed to the place desired.

D represents supports for the fan-shaft, and are attached to the ring E, which is held to its place on the side of the case or shell A by and through the medium of set-screws *f* and groove *e* in the flange 5, projecting outward from the side of the shell A.

The bell-mouthed throat B is secured to the ring E', which is held in the desired position on the side of the case A by and through the medium of screws *f'* and the groove *e'* in the flange 6.

By securing the rings E and E' in position by and through the medium of the screws, and the grooves hereinbefore described, the supports for the fan-shaft can be adjusted to suit the position and angle of the driving-belt for the fan-shaft H and its driving-pulley P.

The journals of the fan-shafts H are tapering, and rotate in bearings I, which are provided with flanges O, which, in connection with screws X, hold the bearings I in the oil-chamber J, which is fitted in a socket, K, which is a section of a ball, with an opening through its center, adapted to the outer diameter of the oil-chamber J.

The ball-socket K is cut open, as indicated at 8, in fig. 6, sheet B, and is fitted in the supports D and B', and held in position through the medium of flange or disk O' and screws X'.

The oil-chambers J are provided with cups N, for conducting oil into the chamber which surrounds the journal-bearing I of the fan-shaft.

The outer surface of the journal-bearing I is provided with a spiral groove or grooves, as indicated at S, in which is a series of small openings, *t*, which communicate with the interior of the journal I, for the purpose of allowing the oil in chamber J to flow into the interior of the journal-bearing I, and thereby keep the set-screw M and the journals of the shaft H properly lubricated.

The grooves S in the journal-bearing I may be filled with cotton-wick, so that the oil will only seap into the journal-bearing.

The oil-chamber J and journal-bearing I can be set and adjusted by and through the medium of the set-screws X to the journals of the shaft H as they and the bearings wear away.

The set-screws M are used for the purpose of preventing lateral motion of the fan-shaft H.

The floats or wings F are attached to the "spiders" or centers 3 3 3, which are secured in a fixed position on the fan-shaft, and the plane of their face is set at an oblique angle to the axis of the fan-shaft H.

By this arrangement of the floats F, greater suction and forcing power are obtained.

The floats F are rotated in the chamber G, which is separated from the chamber G' by a partition, *m*, in which rotates a screen, *u*, which may consist of a perforated plate or net-work, secured on or to the center or "spider" 4. This screen *u* and partition *m* are used for the purpose of preventing shavings, sawdust, or other matter from coming in contact with the floats, when the fan is used for the purpose of conducting and foreing such matter from one place to

another, as, for example, the shavings from a planing-machine, or saw-dust from a saw to a furnace or other place. When the fan is used for this purpose, the shavings, saw-dust, or other matter, is drawn into the chamber G', and the forcing action of floats F, and the rotating of the cleaning-arms R, will force the shaving, saw-dust, or other matter from the chamber G' into a suitable conductor, which should be attached to the outlet C of the case A.

To the lower inner side of the bell-mouthed throat B is attached a cleaning-arm, X'', which projects inward to the screen *u*, and extends upward, and is set at such an angle as is best adapted for keeping the screen clean from the shavings, saw-dust, and such other matter as may be drawn into the chamber G'.

The fan or blower hereinbefore described may be used for any purpose to which it is or can be adapted.

Having thus described the nature, construction, and operation of my improvement,

What I claim as of my invention is—

1. The case A, divided into two or more chambers by a partition or partitions, and used in combination with the floats F, revolving screen *u*, and cleaning-arm or arms R, substantially as herein described, and for the purpose set forth.

2. The combination of a revolving screen with the floats or wings of a fan or blower, substantially as herein described, and for the purpose set forth.

3. The combination of the rings E and E', set-screws *f* and *f'*, grooves *e* and *e'* and flanges 5 and 6, with the supports D and B', and shaft H and its driving-pulley, substantially as herein described, and for the purpose set forth.

4. The combination of the journal-bearings I with oil-chamber J, supports D and B', and journals of shaft H, substantially as herein described, and for the purpose set forth.

5. The combination of the set-screw M with the journal-bearing I, oil-chamber J, set-screws X, and shaft H, substantially as herein described, and for the purpose set forth.

6. The combination of the ball-socket K, flange or disk O', set-screws X', oil-chamber J, and journal-bearing I with the supports D and B' and shaft H, substantially as herein described, and for the purpose set forth.

7. The journal-bearing I, provided with grooves S and openings *t*, communicating with the interior of the journal-bearing, as herein described, and for the purpose set forth.

8. The combination of the stationary cleaning-arm X'' with the revolving screen *u*, substantially as herein described, and for the purpose set forth.

9. The floats or wings of a fan or blower, when the plane of their face forms an obtuse angle with a line radial from the axis of the fan-shaft, substantially as herein described, and for the purpose set forth.

W. S. COLWELL.

Witnesses:
E. N. COLWELL,
J. W. GOVIER.