C. G. Sargent,

Fan Blower,

No. 48,593. Patented July 4, 1865.

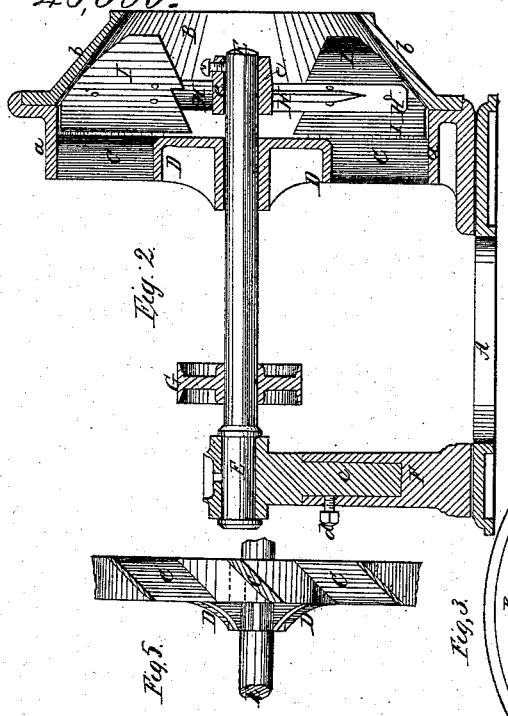

Fig. 2.

Fig. 5.

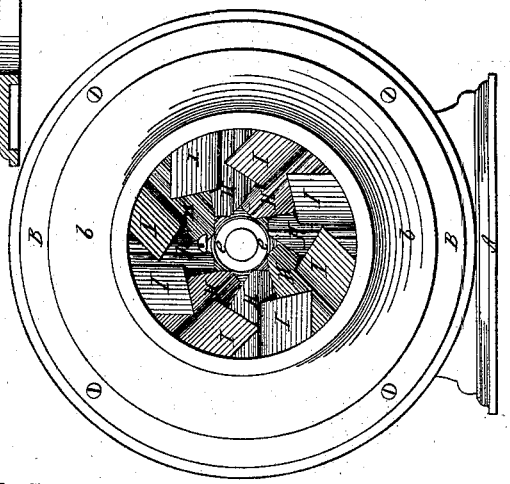

Fig. 3.

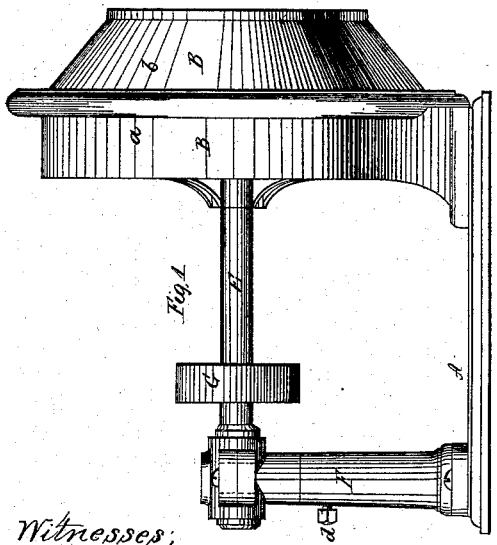

Fig. 1.

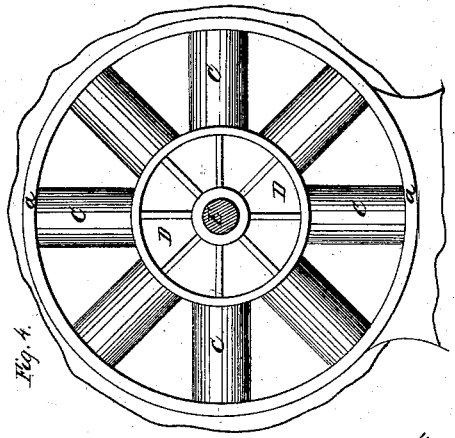

Fig. 4.

Witnesses;

Jno. D. Patten

A. Moore

Inventor;

Charles G. Sargent,

Per A. B. Stoughton, Atty

UNITED STATES PATENT OFFICE.

CHAS. G. SARGENT, OF GRANITEVILLE, MASSACHUSETTS.

IMPROVEMENT IN FAN-BLOWERS.

Specification forming part of Letters Patent No. **48,593**, dated February 10, 1865.

To all whom it may concern:

Be it known that I, CHARLES G. SARGENT, of Graniteville, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in a Fan-Wheel or Blowing Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents an external view of the fan. Fig. 2 represents a longitudinal vertical section thereof. Fig. 3 represents a front or face view. Fig. 4 represents a rear view, showing only the arms or vanes of the fan-case, the fan-wheel being omitted; and Fig. 5 shows a broken horizontal view and section of the arms or vanes to represent their obliquity.

Similar letters of reference, where they occur in the separate figures, denote like parts in all the drawings.

My invention consists, first, in combining with a fan-case partially cylindrical and partially conical, through which the air is drawn or forced, a series of revolving fan blades or vanes that are inclined to the axis of the shaft on which they are placed, and also inclined to suit the conical shape of the case; and my invention further consists in combining with the fan-wheel a series of stationary arms or vanes on or in the fan-case to act as cut-offs and directors to the blast of air passing through the case.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawings.

A represents a base or bed to which the fan-case B is united, said fan-case being composed of a cylindrical portion, *a*, and of a conical portion, *b*. The front of the fan-case is open to admit the air drawn in by the fan-wheel, and its rear portion is furnished with a series of oblique arms or vanes, C, attached to a central plate, D, which forms one of the bearings of the fan-shaft E, the other bearing of said shaft being in or on the pillar F, which is also secured to the bed-plate A.

A pulley, G, is placed on the fan-shaft, by which the fan may be driven, and the rear bearing of the fan-shaft on the pillar F may be adjusted by means of the shank *c* and set-screw *d*.

On the hub *e* of the fan-wheel, which fits on and is fastened to the fan-shaft E at its forward end, are cast or otherwise fastened a series of oblique arms, H, to which the fan blades or vanes I are attached. The general form of these blades or vanes I may be seen in Fig. 2, while their oblique or inclined positions with regard to the fan-shaft may be seen in Fig. 3. Their faces stand at about an angle of forty-five degrees with the longitudinal axis of the fan-shaft, and their inner and outer edges incline at about the same angle (but more particularly their outer edges) with regard to the wind opening or eye of the fan-case. The arms or vanes C, cast with or otherwise secured to the central plate, D, incline also at about an angle of forty-five degrees with the line of the shaft E, and in the direction of the blast driven or drawn through the fan-case. The blades I of the fan-wheel run in close proximity to the stationary arms or vanes C of the fan-case, and the latter, inclining in the direction in which the blast is driven, act as directors to the blast, and as each blade of the fan-wheel passes each arm or vane C said arm or vane acts as a cut-off, relieving the fan-blade of the resistance or back action of the air upon the fan wings or blades. The air, it will be perceived, is taken in at or near the center of the fan-case and driven out at or near the perimeter thereof. The fan-wings hold the air until they pass the stationary arms, vanes, cut-offs, or directors C, when the latter take the driven blast and relieve the fan wings or blades of the pressure or resistance upon them.

I find, in practice, that the inclinations of the arms, blades, vanes, &c., mentioned above give good results; but I do not restrict myself to these precise inclinations, for they may be varied without departing from the general characteristics of the invention.

Having thus fully described the nature, object, and purpose of my invention, what I claim therein as new, and desire to secure by Letters Patent, is—

1. In combination with a fan-case, substantially such as described, a series of fan wings or blades inclining outward and backward, and revolving in said case, in the manner and for the purpose substantially as described.

2. In combination with the inclined wings or blades of a revolving fan, substantially such as herein described, the stationary inclined arms or vanes in the fan-case, for the purpose substantially as herein described.

CHAS. G. SARGENT.

Witnesses:

LUTHER PRESCOTT,

FREDERICK G. SARGENT.