

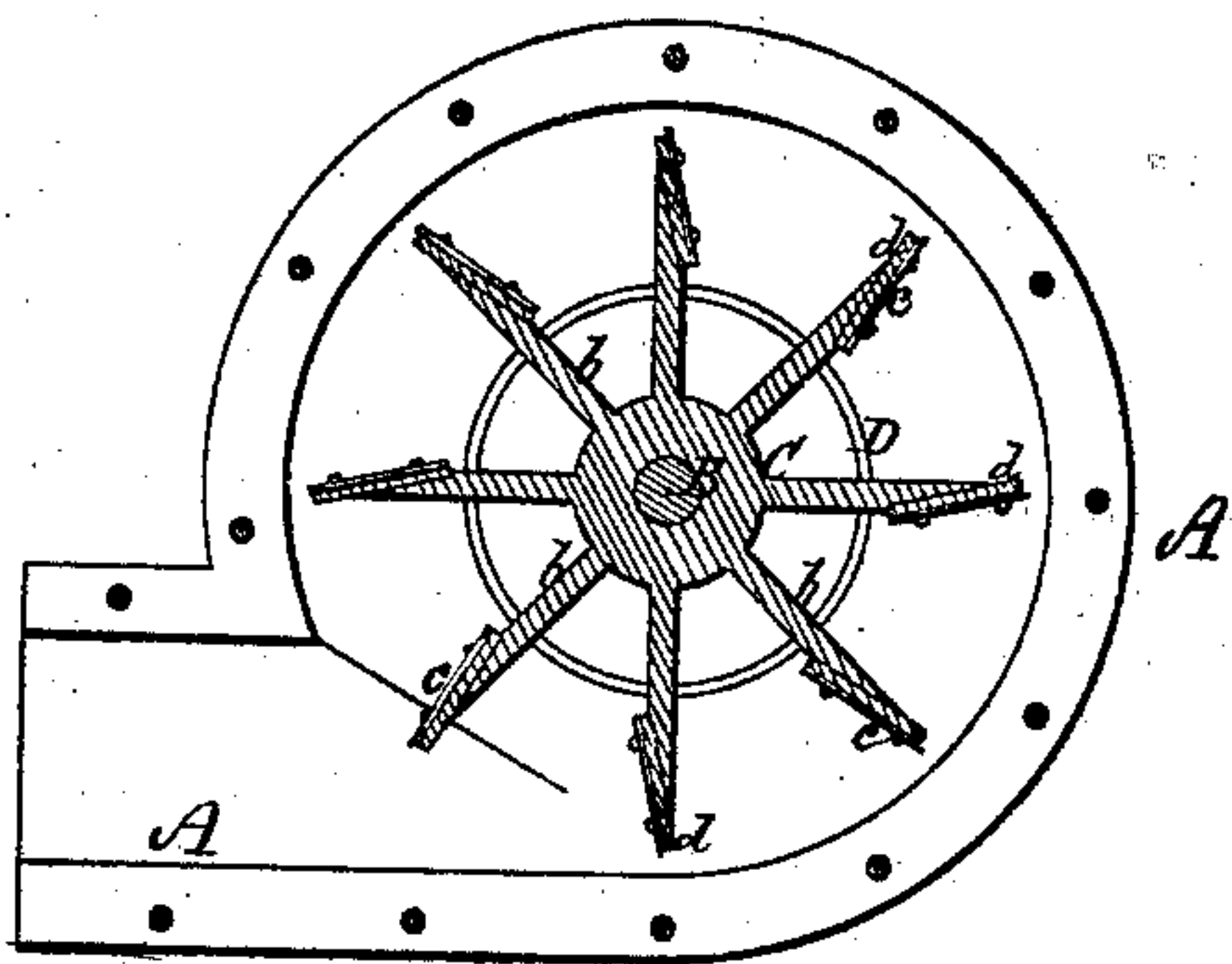
*G. C. Hawkins,*

*Fan Blower.*

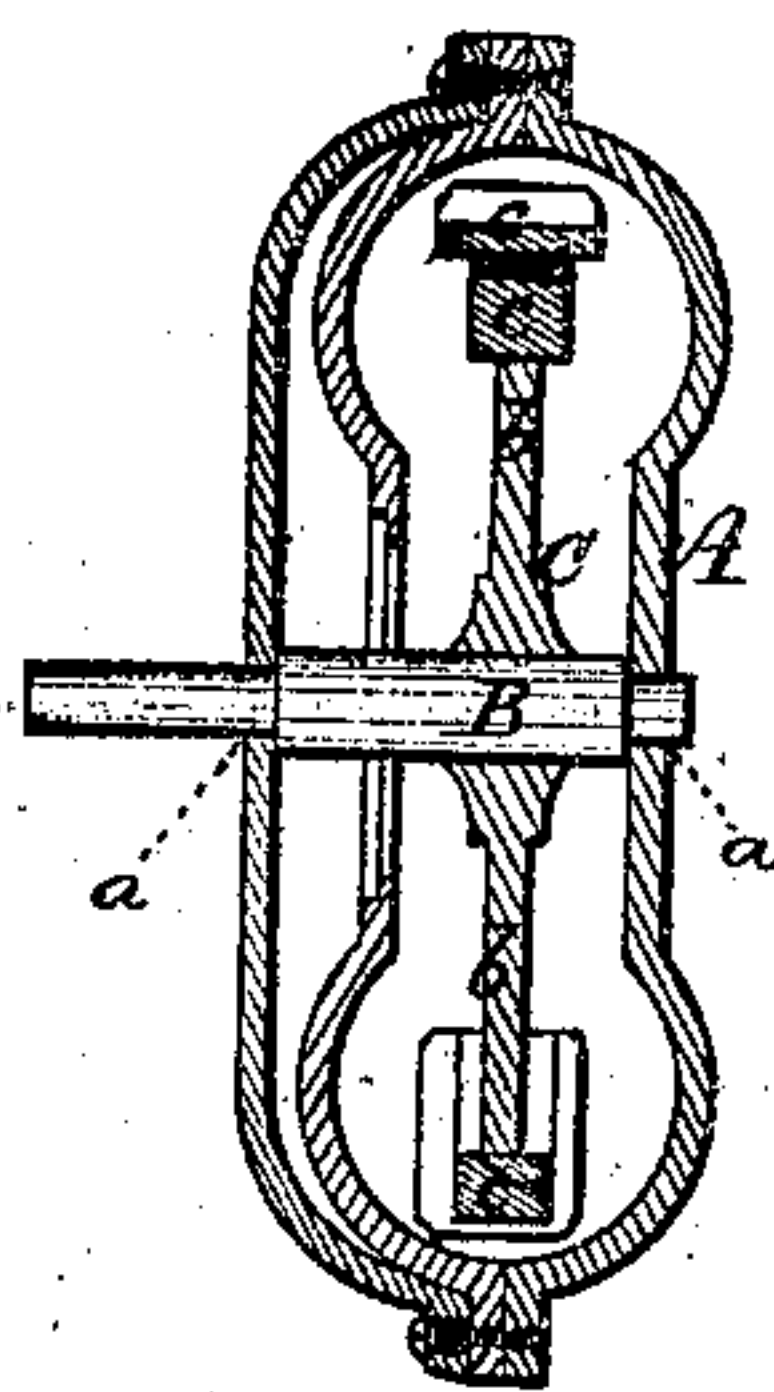
*No. 110,915,*

*Patented Jan. 10. 1871.*

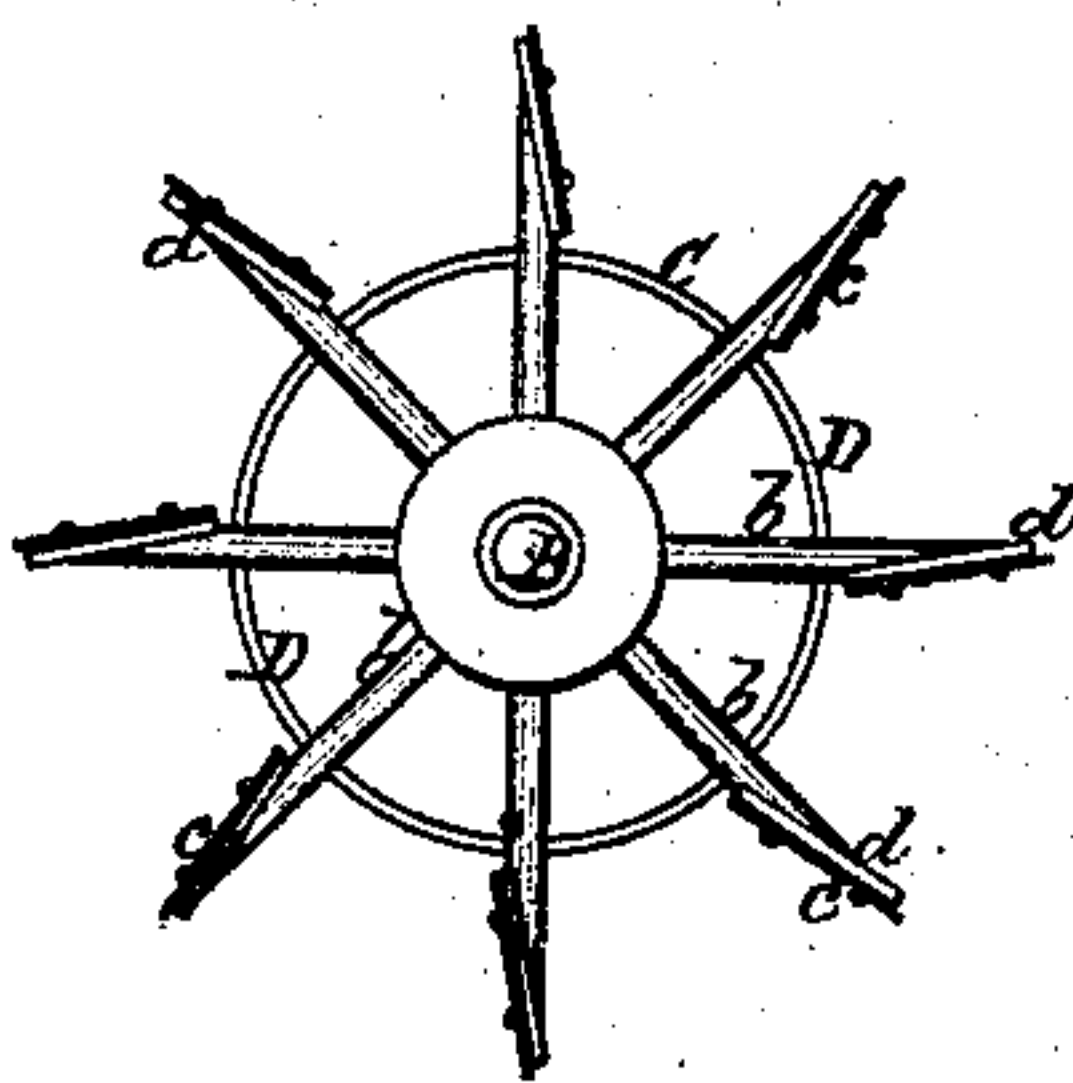
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



*Witnesses,*

*Wm. Griffith*

*H. Saunders*

*Gardner C. Hawkins.*

*by his Attorney*

*Frederick Curtis.*

# United States Patent Office.

GARDNER C. HAWKINS, OF BOSTON, MASSACHUSETTS.

Letters Patent No. 110,915, dated January 10, 1871.

## IMPROVEMENT IN AIR-ENGINES OR FAN-BLOWERS.

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

*To all to whom these presents shall come :*

Be it known that I, GARDNER C. HAWKINS, of Boston, in the county of Suffolk and State of Massachusetts, have made an invention of certain Improvements in the Construction of Air-Engines or Fan-Blowers, so called; and do hereby declare the following to be a full, clear, and exact description thereof, due reference being had to the accompanying drawing making part of this specification, and in which—

Figures 1 and 2' are opposite vertical sections of a "blower" containing my improvements;

Figure 3 being an elevation of its skeleton-wheel, as removed from the outer case or shell.

The principal object I have had in view in originating the invention herein described has been, after consulting extreme economy in cost, to obviate the injurious jar and consequent wear of the engine resulting from the vibration of the radial arms which compose the part of the wheel that supports and gives motion to the air-forcing blades, as well as to abolish the annoying sounds now resulting from such vibration, and to greatly strengthen the various parts composing the said wheel.

The invention consists in the introduction between each arm of the wheel and the blade or fan attached to it, of a sheet or block of India rubber or other suitable elastic material, which shall serve to receive and vitiate, to a considerable extent, the vibration which the flight of the fan through the air would otherwise impart to the arm and other part of the engine.

The drawing accompanying this specification, and wherein my present invention is illustrated, represents, at—

A, the upright case of an air-engine of the "snail-shell" form, so called, the horizontal wheel-supporting shaft of the engine being represented, at B, as supported in suitable bearings or boxes, *a a*, making part of or affixed in a proper manner to the opposite sides of the case A, a radial-armed wheel, C, being mounted upon such shaft, this arrangement of case, shaft, and wheel and bearings being the same as now

in general use, and constituting, in themselves, no part of my invention.

In carrying out this invention, I unite the entire series of radial arms, *b b*, &c., of the wheel C, by an annular brace or ring, D, situated somewhat near their outer ends, such ring being concentric with the axis of the wheel, in order, as before observed, to offer, practically, little if any resistance to the passage of the wheel through the air, and yet serve to greatly strengthen and mutually support the arms, as well as to vitiate or lessen vibration of the same.

To complete the action of the annular brace D, or, in itself, to abolish the sound or "hum" imparted to the wheel by the passage of the same through the air, I interpose between each fan or vane, *c c*, &c., of the wheel, and the arm or spoke to which such fan is attached, a sheet or block, *d*, of India rubber or other elastic substance or material, which receives and dissipates the vibration which would otherwise be imparted by the fan to the arm and other parts of the engine.

The above-described construction of wheel enables me to produce an effective air-engine at very little comparative cost, and, while removing the annoying sound now common to such engines, greatly prolongs its term of service, as compared with those now manufactured.

Although the accompanying drawing represents but one series of blade-supporting arms, two or more may be adopted at pleasure.

*Claim.*

I claim—

The interposition, between the arm or spoke of the wheel of an air-engine and the fan or blade carried thereby, of an elastic medium, for purposes stated.

GARDNER C. HAWKINS.

Witnesses:

FRED. CURTIS,  
EDW. GRIFFITH.