No. 705,830. Patented July 29, 1902.

C. A. EVANS.

PNEUMATIC MOTOR FOR CAR FANS AND VENTILATORS.

(Application filed Nov. 24, 1900.)

(No Model.)

Fig. 1.

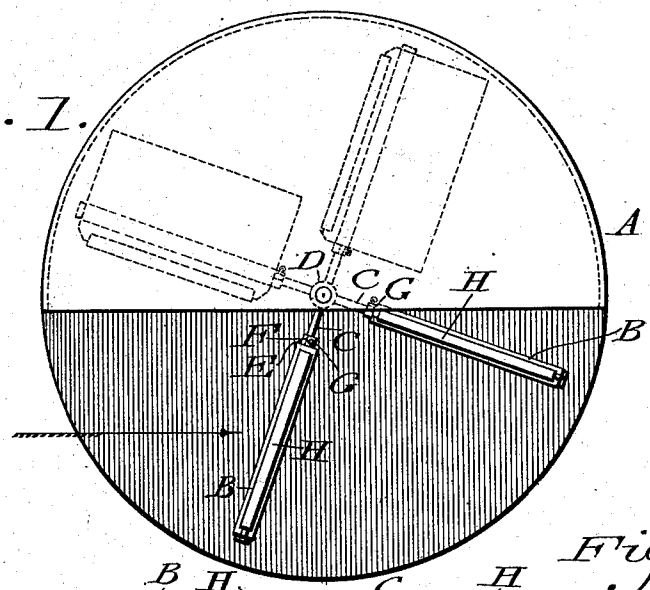


Fig. 2.

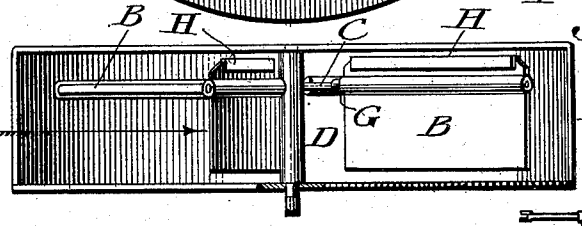


Fig. 3.

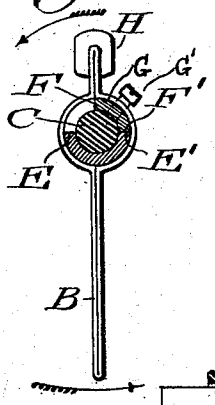


Fig. 4.

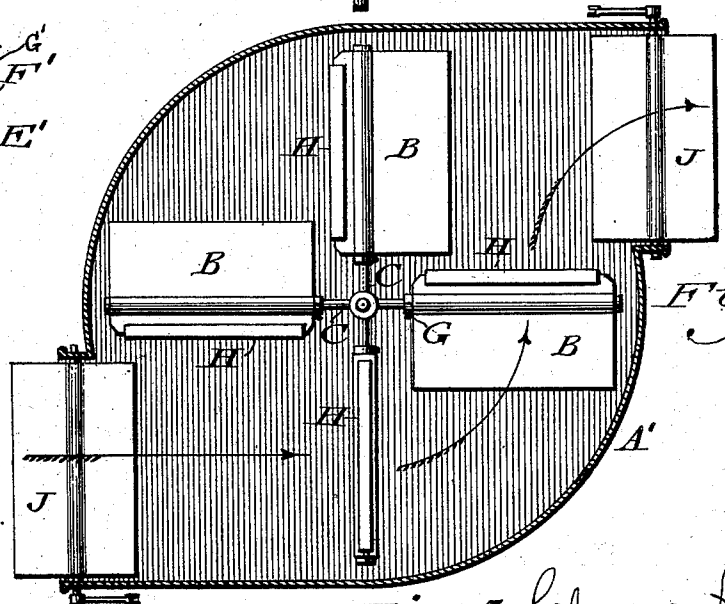
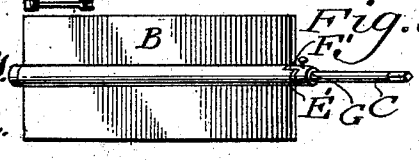


Fig. 5.



Witnesses.
P. J. Staples.
L. Louville.

Inventor
Clarence A. Evans.
By Wiederhein & Fairbanks.
Attorneys

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

CLARENCE A. EVANS, OF UPLAND, PENNSYLVANIA.

PNEUMATIC MOTOR FOR CAR FANS AND VENTILATORS.

SPECIFICATION forming part of Letters Patent No. 705,830, dated July 29, 1902.

Application filed November 24, 1900. Serial No. 37,585. (No model.)

To all whom it may concern:

Be it known that I, CLARENCE A. EVANS, a citizen of the United States, residing at Upland, in the county of Delaware, State of Pennsylvania, have invented a new and useful Improvement in Pneumatic Motors for Car Fans and Ventilators and other Mechanical Purposes, of which the following is a specification.

My invention consists of an improvement in a pneumatic motor embodying a wind-chest and vanes therein, the latter being adapted to present their faces or broad sides to the wind, so as to receive the impact of the same for effectively operating a driving-shaft, and then automatically feathering in the return motion, so as to offer the least surface and resistance to the wind, thus causing great gain in speed and power and simplifying the construction of a motor of the class.

Figure 1 represents a top or plan view of a pneumatic motor embodying my invention. Fig. 2 represents a vertical section thereof. Fig. 3 represents a section, on an enlarged scale, taken through the hub and axis of one of the vanes and a collar on said axis. Fig. 4 represents a partial plan and a partial horizontal section of another form thereof. Fig. 5 represents a perspective view of a form of a vane that may be employed.

Similar letters of reference indicate corresponding parts in the figures.

Referring to the drawings, A designates a wind-chest which in the present case is adapted to be suitably mounted on a car or other vehicle, and B designates a series of vanes which depend from the arms or axes C of the driving-shaft D, the latter being mounted in any suitable manner on the upper and lower walls of said chest, it being noticed that a portion of the periphery of said chest is cut away or uncovered, so that the wind may have access to said vanes. By rotating said chest more or less of the uncovered portion may be presented to the wind, so as to regulate the amount of the same to be directed against said vanes. The vanes are hung loosely on the arms C, so as to swing thereon, and have their hubs provided with shoulders E E', the same being adapted to engage the shoulders F F' on the collars G, which are firmly secured to the arms or shafts C by means of bolts or screws G', it being noticed that the shoulders E E' are so separated that when the vanes are in vertical positions the shoulders E' abut against the shoulders F', whereby the vanes retain said vertical positions, and when in feathering positions the shoulders E abut against the shoulders F, and the vanes are thus prevented from overturning in improper direction. Owing to the bolts on the collars G the latter may be turned so as to adjust its shoulders with those on the hubs of the vanes, the shouldered portions of the hubs being adapted to play between the shoulders of the collars, and thus come positively into abutment in either the upright or horizontal positions of the vanes.

The upper portions of the vanes B are weighted or have weights formed thereon, as at H, for purposes to be hereinafter described.

It will be seen that when the car or vehicle is in motion the broad faces of the vanes receive the impact of the wind, whereby they are propelled by the same, and thus impart motion to the shaft D, and when as they rotate they are relieved of such impact or are no longer controlled by the direct force or pressure of the wind they turn in their flight to feathering positions and present their edges to the air in the chest, so as to pass freely through the same with the least surface, and so offer but little resistance to the wind or air. Then when they are again to receive the impact they return to their vertical position or automatically right themselves, and so again present their broad sides or faces to the wind and are operated as before.

In Fig. 4 I show a different form of a wind-chest, as A', the same having its inlet and outlet on opposite places and a valve or gate J at each place to regulate the extent of air admitted into the chest, or completely cut off the same when it is not desired to operate the shaft D and the fan and ventilator connected therewith; but in either case the vanes present the greatest area below the arms or axes C, and they are counterbalanced by the weights H, so as to establish an equipoise, which enables them to easily and readily feather by centrifugal force, avoiding eccentrics, cams, or other devices, it being also noticed that the speed of the vanes is con-

trolled by so rotating the wind-chest A that more or less portion of the periphery is uncovered, while in Fig. 4 the same object is accomplished by means of the valves or gates J.

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

1. The combination of a wind-chest and counterbalanced vane, a shaft freely carrying said vane, and a collar with separated shoulders on said shaft, said vane having separated shoulders on its hub, whereby the vane may be held in a vertical position while presenting its broad side or face to the impact of wind and in a feathering position while in its return motion, said shouldered collar being freely mounted on said arm and adjustably connected therewith whereby its abutments and those of the hub of the vane may be set relatively to each other.

2. The combination of a swinging vane, an arm carrying said vane, a counterpoise on said vane to facilitate the turning of the same by centrifugal force, a collar on said arm provided with separated shoulders, and means for adjustably securing said collar to said arm, the hub of said vane having separated shoulders thereon which are adapted to play between the shoulders of said collar and positively engage with the latter-named shoulders in the upright and horizontal positions of the vane.

CLARENCE A. EVANS.

Witnesses:
JOHN A. WIEDERSHEIM,
C. D. MCVAY.