

No. 720,630.

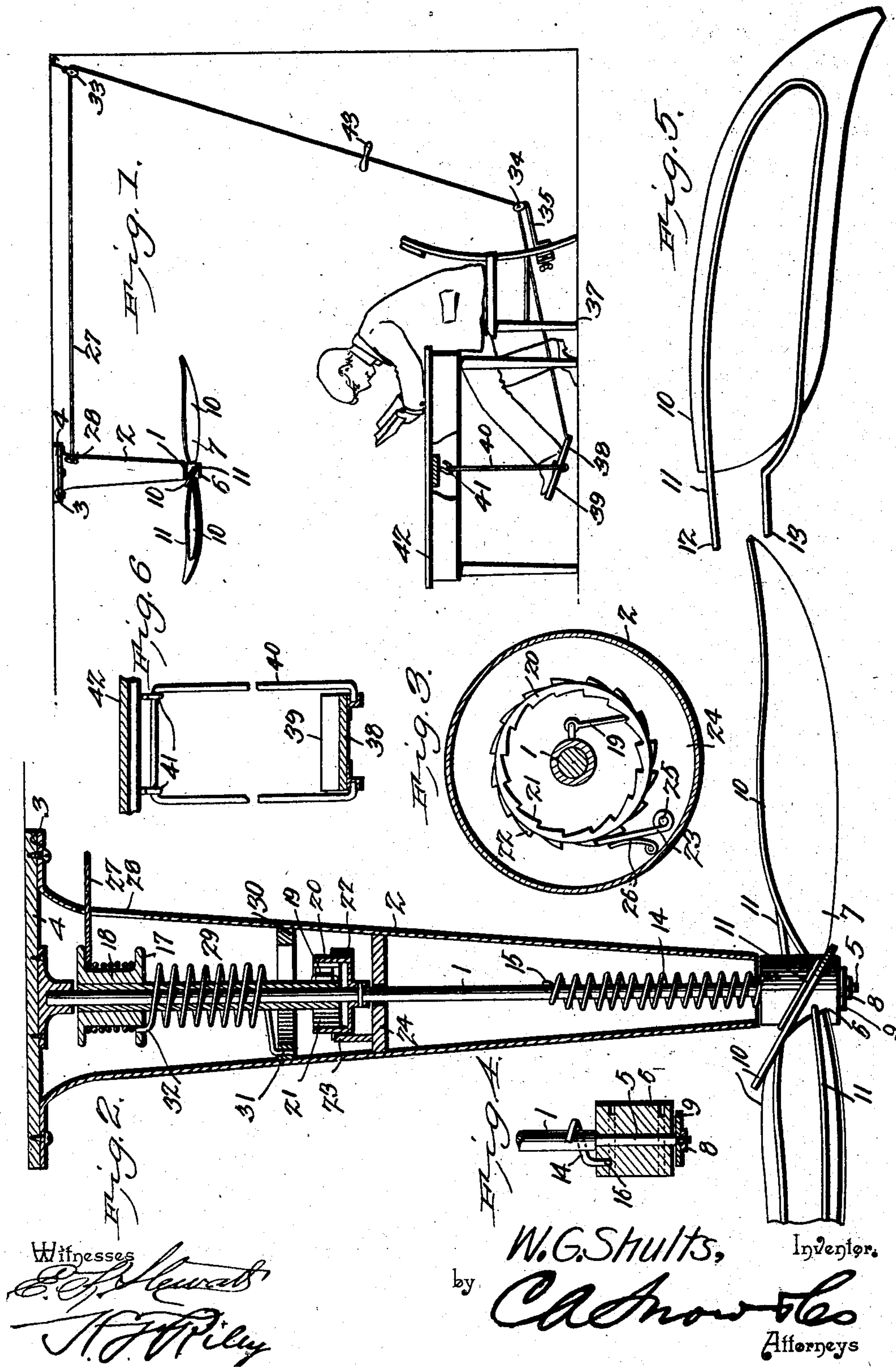
PATENTED FEB. 17, 1903.

W. G. SHULTS.

FAN.

APPLICATION FILED MAR. 21, 1902.

NO MODEL.





# UNITED STATES PATENT OFFICE.

WILLIAM G. SHULTS, OF KNOXVILLE, TENNESSEE.

## FAN.

SPECIFICATION forming part of Letters Patent No. 720,630, dated February 17, 1903.

Application filed March 21, 1902. Serial No. 99,370. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM G. SHULTS, a citizen of the United States, residing at Knoxville, in the county of Knox and State of Tennessee, have invented a new and useful Fan, of which the following is a specification.

The invention relates to improvements in fans.

The object of the present invention is to improve the construction of fans and to provide a simple and comparatively inexpensive one designed for use in public or private dining-rooms and in various other apartments and places and adapted to be conveniently suspended from a ceiling or other support and capable of being operated by a quick push or pull instead of requiring a steady slow laborious push or pull.

The invention consists in the novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and particularly pointed out in the claims hereto appended.

In the drawings, Figure 1 is a side elevation of a fan constructed in accordance with this invention. Fig. 2 is a vertical sectional view illustrating the manner of mounting the rotary fan. Fig. 3 is a horizontal sectional view on the line 3 3 of Fig. 2. Fig. 4 is a detail view of the lower end of the fan-shaft and the hub of the rotary fan, illustrating the manner of connecting the hub to the combined cushioning and power-storing spring. Fig. 5 is a detail view illustrating the construction of the blades of the fan. Fig. 6 is a detail view illustrating the construction of the foot-lever.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

1 designates a vertical fan-shaft arranged within a depending tapering casing 2, designed to be suspended from a ceiling or other suitable support and provided at its upper end with an outwardly-extending annular flange 3, perforated for the reception of suitable fastening devices for securing the casing to a bearing-plate 4 and for connecting the parts to the ceiling or other suitable support; but any other suitable means may be employed for this purpose, as will be readily understood. The upper end of the fan-shaft is

journaled in the bearing-plate 4, and the lower end 5 of the shaft is reduced, as clearly illustrated in Fig. 4 of the accompanying drawings, and receives the hub 6 of a rotary fan 7, which is secured to the reduced portion of the shaft by means of a nut 8 and washer 9 or other suitable means. The hub is adapted to turn loosely on the lower end of the shaft for a purpose hereinafter described, and the fan is provided with a series of sheet-metal blades 10, set at an angle and connected with the hub by means of a wire loop 11, soldered or otherwise secured to one face of the blade and having the terminals 12 and 13 of its sides passed through the hub 6 and suitably secured to the same by clenching them at the outer faces thereof or by any other means. The sheet-metal blades, which may be of any desired form, are preferably shaped as illustrated in Fig. 5 and have tapering outer portions, and when the rotary fan is operated the blades are adapted to agitate the air.

The fan is designed to be mounted over a table, as illustrated in Fig. 1 of the accompanying drawings, and it is capable of creating a sufficient circulation or agitation of the air to keep away flies and to keep the occupants of chairs around the table or in close proximity thereto comfortable. The fan is adapted to be operated, as hereinafter explained, by a person seated at the table, or it may be operated at a distance therefrom, as desired.

In order to enable the fan to be operated by a quick or sudden push or pull instead of requiring a strong steady laborious push or pull, the hub, which turns loosely on the lower end of the shaft a limited distance, is connected with the lower end of a combined cushioning and power-storing spring 14, disposed on the lower portion of the shaft, as clearly shown in Fig. 2. The spring, which is coiled around the shaft, has its upper end 15 secured in a perforation of the same, and its lower end 16 is bent downward and fitted in a socket of the upper end of the hub. When the operating mechanism is pulled suddenly or quickly, the shaft is rotated and responds quickly to the operating mechanism; but the spring 14, which connects the shaft with the fan, is partially wound up by such rotation, thereby



storing the power and permitting the shaft to move independently of the fan. This will enable the operating mechanism to be conveniently operated by a short, sharp, or sudden movement, and at the same time will enable the fan to begin its rotation with a slow movement.

Mounted upon the shaft 1, at the upper portion thereof, is a rotary sleeve 17, provided at its upper portion with a drum 18 and having an actuating-pawl 19 at its lower end for engaging a ratchet-wheel 20 of the shaft 1. The ratchet-wheel 20, which is suitably fixed to the shaft, is provided with an upwardly-extending annular rim, having interiorly-arranged ratchet-teeth 21 to be engaged by the pawl 19 and provided with exterior ratchet-teeth 22, arranged to be engaged by a spring-actuated check-pawl 23, pivotally mounted on a disk 24. The disk 24 is suitably fixed within the casing and is provided with a central opening to receive the shaft, and the pawl will prevent the shaft from rotating backward, thereby causing the spring 14 to rotate the fan, as before explained. The check-pawl is secured to the stationary disk or plate 24 by means of a suitable pivot 25, and it is engaged by a spring 26, arranged at the outer face of the check-pawl and having one end secured to the said disk or plate 24. The other end of the spring 26 is free and is adapted to move inward and outward to permit the pawl to swing sufficiently to engage the exterior teeth and allow the same to pass it when the shaft is rotated forwardly.

The drum 18 receives an operating-cord 27 or other suitable flexible connection, which is wound around the drum and which extends outward to an opening 28 of the upper portion of the casing to the point where it is designed to be operated. When the flexible connection is pulled, as hereinafter explained, it is unwound from the drum, thereby rotating the shaft forwardly, and the flexible connection is automatically rewound on the drum when it is released by means of a coiled spring 29, disposed on the sleeve 17 and connected with the same and with a ring 30 of the casing 2. The ring 30 is suitably fitted in the casing 2 at a point slightly above the ratchet-wheel, and it is provided with a perforation or socket for the lower end 31 of the coiled spring 29. The upper end 32 of the coiled spring is secured in an opening of the lower flange of the drum; but it may be connected with the sleeve in any other suitable manner. When the flexible operating connection is released by the operator after it has been pulled, the spring rotates the sleeve backwardly, the pawl 19 permitting this retrograde rotation and the pawl 23 preventing any backward movement of the ratchet-wheel.

The operating-cord extends from the drum to a guide-pulley 33, mounted in a block or any other suitable support located in the same horizontal plane as the drum, and the said

cord extends downward from the pulley 33 to a lower guide-pulley 34 to a bracket 35, which is provided with a clamp 36. The bracket 35 is secured, by means of the clamp, to one of the rungs of a chair 37, as indicated in Fig. 1 of the drawings, and the operating-cord extends forward from the guide-pulley 34 to an operating foot-lever 38, consisting of a pedal or plate 39 and a bail 40. The bail or link 40 is suspended from the top of the table by means of a hook 41, and the lower terminals of its sides are arranged in suitable bearings of the pedal 39. A person may sit at the table 42, as indicated in Fig. 1 of the drawings, and by pushing forward on the foot-lever the rotary fan will be operated. The operating-cord is also provided with a suitable grip or handle 43 to enable the fan to be readily operated by hand when desired.

It will be seen that the fan is exceedingly simple and inexpensive in construction, that it may be operated by foot or hand, and that in operating it the cord may be pulled with a short quick motion instead of a slow laborious pull, as the combined cushioning and power-storing spring will permit the shaft to move independently of the fan while the power is being applied.

What I claim is—

1. In a device of the class described, the combination of a casing, a fan-shaft mounted within the casing, a fan connected with the shaft, a ratchet-wheel carried by the shaft, a sleeve mounted on the shaft and provided with a drum, a coiled spring disposed on the sleeve and arranged within the casing and connected with the latter and with the drum, a pawl carried by the sleeve and engaging the ratchet-wheel, and a flexible connection wound around the drum and adapted to actuate the same, substantially as described.

2. In a device of the class described, the combination of a casing, a fan-shaft arranged within the casing, a fan connected with the shaft, a ratchet-wheel fixed to the shaft and provided with interior and exterior teeth, a pawl mounted on the casing and engaging the exterior teeth, a sleeve arranged on the shaft and provided with a drum, a coiled spring disposed on the sleeve and located within the casing and connected with the same and with the drum, a pawl carried by the sleeve and engaging the interiorly-arranged teeth of the ratchet-wheel, and a flexible connection arranged on the drum, substantially as described.

3. In a device of the class described, the combination of a casing, a fan-shaft, a fan loosely arranged on the shaft, a coiled spring disposed on the shaft and connected with the same and with the fan and arranged within the casing, a ratchet-wheel fixed to the shaft, a sleeve located within the casing and mounted on the shaft and provided with a drum, a coiled spring disposed on the sleeve and connected with the drum and with the casing, a pawl carried by the sleeve and engaging the



ratchet-wheel, and a flexible connection wound around the shaft, substantially as described.

4. In a device of the class described, the  
5 combination of a vertical fan-shaft, a fan loosely arranged on the lower end of the same, a coiled spring disposed on the lower portion of the shaft and connected with the same and with the fan, a sleeve arranged on the upper  
10 portion of the shaft and having a drum, a coiled spring disposed on the sleeve and connected with the same and with a fixed support, a ratchet-wheel arranged at one end of

the sleeve and secured to the shaft, a pawl carried by the sleeve and engaging the 15 ratchet-wheel, and a flexible connection wound around the drum, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in 20 the presence of two witnesses.

WILLIAM G. SHULTS.

Witnesses:

W. J. DILLON,  
J. H. JOCHUM, Jr.