Sept. 23, 1924. 1,509,601

H. W. JOHNSON ET AL

FAN

Original Filed Sept. 11, 1922

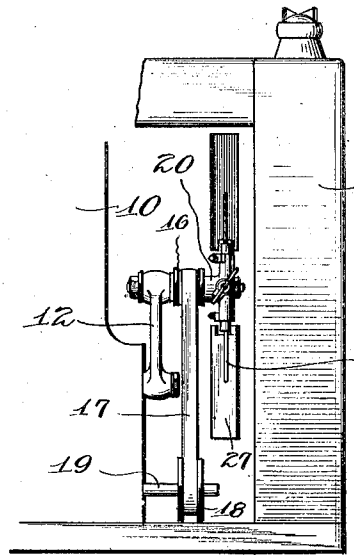


Fig. 1.

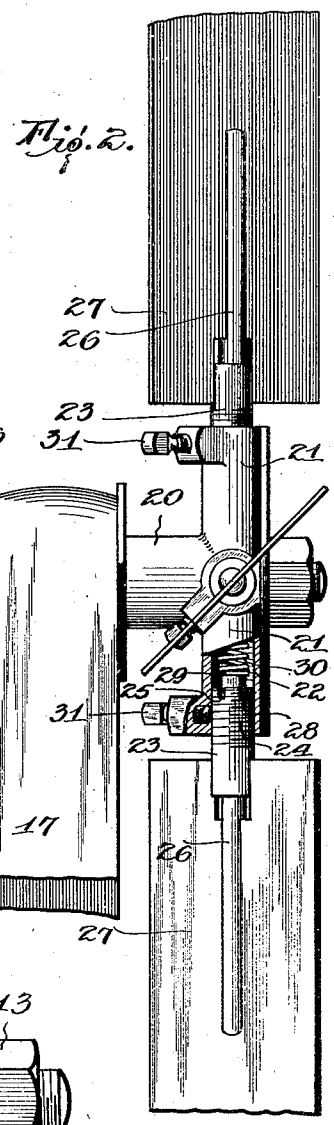


Fig. 2.

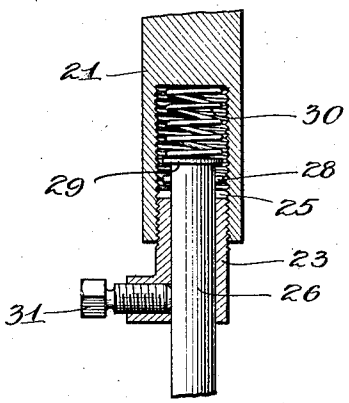


Fig. 3.

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UNITED STATES PATENT OFFICE.

HARRY W. JOHNSON, ARTHUR F. JOHNSON, FREDOLPH JOHNSON, AND CHARLES V. JOHNSON, OF LITTLE FALLS, MINNESOTA.

FAN.

Application filed September 11, 1922, Serial No. 587,511. Renewed August 4, 1924.

To all whom it may concern:

Be it known that we, HARRY W. JOHNSON, ARTHUR F. JOHNSON, FREDOLPH JOHNSON, and CHARLES V. JOHNSON, all residing at Little Falls, county of Morrison, State of Minnesota, citizens of the United States, have invented certain new and useful Improvements in Fans, of which the following is a specification.

This invention relates to fans for automobiles and particularly to those fans having adjustable blades.

During cold weather, it has been found that, with the fan operating on automobiles, the circulating water will be kept too cool due to the fact that the fan has been designed to keep the circulating water cool during warm and hot weather. Often times, without proper precautions being taken, automobiles are operated during cold weather and before the circulating water is brought to the proper temperature, are left at the curb. In a very short time, the water in the circulating system becomes frozen which sometimes results in cracking the cylinder block. Also in going from one altitude to another as in the western states and during the constant changing temperature throughout the course of the day in some parts of the country, great difficulty is experienced in maintaining the proper temperature of the circulating water, in order to obtain efficiency.

The primary object of our invention is the provision of an improved automobile fan having adjustable blades so arranged that each may be adjusted independently of each other blade and so that they may be quickly adjusted directly at the fan without the use of wrenches or other tools.

Another object of our invention is the provision of an improved fan having adjustable blades which can be easily, quickly and cheaply made, and applied to any automobile without making any alterations other than the removal of the nut or other fan securing means.

Another and further object of our invention is the provision of an improved fan which when adjusted will be kept in adjustment by the centrifugal action of the fan blades.

Referring to the drawing, where a preferred embodiment of our invention is illustrated,

Fig. 1 illustrates the fan as affixed to an automobile.

Fig. 2 is an enlarged view of the fan shown in Fig. 1.

Fig. 3 is a detail cross-sectional view of the adjustable feature of the fan.

10 designates the engine of an automobile, 11 the radiator, 12 a bracket secured to the engine frame by a bolt 13. Suitably mounted in the upper end of the bracket 12, is a shaft 14 which is locked in place by the nut 15.

A pulley 16 is provided for contact with a belt 17 which is driven by a pulley 18 mounted on the main shaft 19. Integral with the pulley 16 and mounted revolubly therewith on the shaft 14, is the fan hub 20.

Radiating therefrom and integral with the hub 20, are blade holding socket portions 21. Each of these socket portions 21 is provided with a bearing as the threaded portion 22 for receiving a sleeve 23 which is shown with a complementary threaded portion 24 as illustrated in Fig. 2. The sleeves 23 at their inner ends are provided with notches 25 which are arranged in pairs, the notches of each pair being diametrically opposite to each other, for a purpose to be described.

Within the sleeve 23, the rod 26 is mounted for rotary and axial movement. This rod 26 provides a stem for each blade 27 of the fan and is provided with a slot which receives the blade. The inner end of the rod is provided with means coacting with the notches 25, such as the pin 28 which extends out at both sides and engages the diametrically opposite notches 25.

Inward of the end of the rod 26 is a small separating plate 29 and inward of the plate 29 is the spring 30 which always tends to force the rod 26 in an outward direction and normally holds the outer ends of the pin 28 in the diametrically opposite slots. A set screw 31 is provided to hold the sleeve 23 in the desired relation to the socket portion 21.

When it is desired to change the adjustment of any blade 27, it is only necessary to press inward radially on the blade which it is desired to change, turn the blade to the desired position and release the pressure. The ends of the pin 28 will then engage the notches 25 which are nearest. It is to be noted that the centrifugal action of the

fan further aids the spring 30 in holding the blades in adjusted position. The blades may all be turned slightly or some may be turned at such an angle that they will reverse or neutralize the action of the others. If desired, the set screw 31 may be loosened, and the sleeve 23 adjusted to the exact desired position.

While we have described in detail an embodiment of our invention, we desire to have it understood that we do not limit ourselves to the exact showing and that modifications and changes may be made without departing from the spirit of our invention and within the scope of the appended claims.

Having described our invention, what we claim is:

1. A fan for automobiles, comprising a hub, radiating blades extending therefrom, connections between the hub and each blade for radial and limited axial movement therebetween, the movement of each blade being independent of the movement of each other blade, means operative under centrifugal force of the rotating fan for securing the blades in adjusted positions when the fan is being rotated.

2. A fan for automobiles comprising a hub, a radiating blade extending therefrom, means connecting the blade and the hub together for pivotal movement and axial movement of the blade relative to the hub, cooperating means between the hub and blade operative to hold the blade against pivotal movement when at its outer axial position and being inoperative to prevent pivotal movement when the blade is forced inward axially and means for normally holding the blade in its outer axial position.

3. A fan for automobiles comprising a hub, a sleeve radially mounted in the hub, to turn relatively thereto and means for securing the sleeve in adjusted position, a radiating fan blade mounted in the sleeve for relative pivotal and axial movement therein, resilient means for normally holding the blade in its outer axial position and coacting connections between the sleeve and the blade for holding the blade in any one of a plurality of adjusted angular positions relative to a plane perpendicular to the hub axis.

4. A fan for automobiles comprising a hub, a sleeve having notches at its inner end and threadedly connected to the hub in a radial position, locking means for holding the sleeve in adjusted position, a radiating fan blade mounted in the sleeve for relative pivotal and axial movement therein, the blade having notch engaging portions for engaging the notches of the sleeve, and a spring for normally holding the notch engaging portions in engagement with the notches.

In testimony whereof we hereunto affix our signatures.

ARTHUR F. JOHNSON.
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HARRY W. JOHNSON.
FREDOLPH JOHNSON.